

PROCEEDINGS

SOCIETY OF CIVIL ENGINEERS
of the

American Society

Civil Engineers

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VOL. LII

FEBRUARY, 1926

No. 2

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PROCEEDINGS

SOCIETY AFFAIRS

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AMERICAN SOCIETY OF CIVIL ENGINEERS

PROCEEDINGS

VOL. LII FEBRUARY, 1926 No. 2

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No. 2

SOCIETY AFFAIRS

Annual Meeting

The 1926 Annual Meeting will mark the records of the Society as one of the most worth while in its history. The many interesting features—business, technical, and social—were so well planned and smoothly carried out as to combine most effectively into a well balanced meeting that left little to be desired.

The regular events of the Business Program were carried out as usual. Of especial interest was the conferring of Honorary Membership on William Barclay Parsons, M. Am. Soc. C. E., and Arthur N. Talbot, Past-President, Am. Soc. C. E. At the same session, the various Society Prizes and Medals were awarded to several eminent engineers. Undoubtedly one of the most notable features of this Session from the standpoint of the Society was the full discussion of the various amendments to the Constitution, the result of which will be covered more fully in the March *Proceedings*. Following a well attended luncheon under congenial surroundings held in the building, the afternoon sessions were given over to the consideration of reports from the various Special Committees of the Society. Perhaps nowhere could a better view be gained of the technical activities of the Society during the past year. For the most part, the reports showed intense and conscientious work and definite progress. One Committee, that on Impact in Highway Bridges, presented its Final Report. These reports will be printed later in *Proceedings*.

As a further feature of the general Society activities, the sessions of Thursday, January 21, were fully occupied by the various Technical Divisions, giving an excellent indication of the wide scope and deep interest of the Divisions in specific engineering problems. In this respect, the activities of a new Division organized at this meeting, the Construction Division, are significant. This Division started with enthusiasm and devoted considerable time to discussing its opportunities and obligations, with papers on general and specific construction topics.

The sessions of other Divisions were similarly well attended and productive of valuable discussion. Members of the Structural Division listened to illustrated talks on the Florianopolis Suspension Bridge in Brazil, on Forest Utilization, and discussed various reports of Society Committees dealing with structural topics. The Highway Division considered first the general topic of Highway Location followed by discussion of the Bituminous Treatment of Earth Roads, a paper on Concrete Pavement Design, and finally two excellent motion pictures illustrating specific highway engineering work. The attendance of the American City Planning Institute lent especial interest to the meeting of the City Planning Division. The joint deliberation covered the topics of the Relation Between the Town Planner and the Engineer, and descriptions of actual city planning work in Cincinnati, Ohio.

The Sanitary Engineering Division devoted itself to the single topic of Garbage Disposal, reviewing many methods as illustrated by practice in Michigan, California, New York, and Canada. Three illustrated papers were on the program of the Power Division, covering descriptions of Power Stations at Kearny, N. J., New York City (Hell Gate Station), and Northern New York at the Soft Maple Dam. The meeting of the Waterways Division provided studies regarding the Deeper Hudson River and the New York Barge Canal, with an inspection trip to visit actual work of drilling in the harbor.

As usual, the Reception and Dinner Dance on Wednesday evening in the Grand Ball Room of the Hotel Pennsylvania was the outstanding social event of the meeting. The excellent dinner, splendid vocal entertainment, and fine dance music, combined to create an evening of enjoyment that equalled the high standard of previous years. Following the innovation of last year, the Entertainment and Smoker of Thursday evening proved a great success. "The Life o'Reilly—A Study in Ethics" as vividly depicted by the Annual Meeting Committee was thoroughly appreciated by those attending, and following this the Smoker that taxed the accommodations of the Fifth Floor, was a most popular and widely attended informal social gathering.

As a final "get-together" the trip arranged for Friday provided an occasion for friendly contact with much of engineering interest as a side issue. Proceeding by special ferry from the Battery, the party first stopped at the new lift bridge of the Central Railroad of New Jersey across Newark Bay, inspecting the construction and operating features, and then went directly to the Holland Tunnel, entering from the Manhattan side. Lunch was served in the Tunnel itself, a unique setting and a most enjoyable repast. It seems especially fitting that the Society should again visit this great engineering work before its final completion, a project which becomes a fitting monument to the late Clifford M. Holland, M. Am. Soc. C. E.

A number of incidental social features distinguished the meeting. The Sanitary Engineering Division held a special dinner on Tuesday evening preceding the meeting and a luncheon on Thursday between its sessions. A number of colleges held re-unions of engineering students during the week; included among these were the Harvard, Yale, and Princeton engineers in joint session, and the Pennsylvania, Dartmouth, Columbia, Cornell, Union, and Lehigh Alumni in individual dinners.

Not to be outdone by the men, the ladies enjoyed a special social program. This included a matinee party on Wednesday, a number of sightseeing trips to parks and museums on Thursday, followed by a tea as guests of the Society at the Hotel Plaza, and theatre parties in the evening. In addition, of course, the ladies were well represented at the Dinner Dance and on the Friday excursion.

The attendance at all the sessions was creditable. The total registration reached about 1,000. The attendance at individual sessions was approximately as follows: Annual Meeting, 400; Lunch, 460; City Planning Division, 75; Construction Division, 100; Highway Division, 50; Power Division, 60; Sanitary Engineering Division, 125; Structural Division, 140; Waterways Division, 50; Dinner Dance, 435; Smoker, 825; and Harbor Excursion, 400.

Perhaps one of the most desirable and valuable effects of the meeting was in the individual contacts of old and new friends. These combined with the features of the program both serious and entertaining to impress an abiding feeling of satisfaction in the 1926 Annual Meeting. No commendation can too highly praise the well directed efforts of the Committee in charge for the excellence of the arrangements, the smoothness of action, and the provision for details.

Organization of San Francisco Office for Employment Service

The work of the newest office of the Engineering Societies Employment Service in San Francisco, Calif., is developing apace. The office has been located in Room 715, Mechanics Institute Building, 57 Post Street, San Francisco, in close proximity to the Engineers' Club. The present affiliated organizations include the four Founder Societies, the California Section of the American Chemical Society, and the Engineers' Club of San Francisco, all of which are represented on the Committee in control. The representative of the Society, F. H. Fowler, M. Am. Soc. C. E., is Chairman of this Committee. The new office is under the charge of Mr. Newton D. Cook, who is at the service of all members (Telephone, Sutter 1684) and is prepared to secure employment or employees in engineering work.

This expansion of the Employment Service calls attention again to the striking advantages and success of the present policy of management, confined to those engineers connected with the four National Societies and involving the financial co-operation of those who are assisted. The enlargement of the scope of the work can be directly traced to the benefit of this policy; conversely, every extension of the Service makes more valuable the effectiveness of offices previously in existence. The close co-operation of all the offices should be mutually helpful and every member is potentially the beneficiary of this situation. With these new facilities for improved service, there is only necessary a wider recognition among members of its possibilities and a more intensive use by all those wishing to improve their position or desiring to obtain the highest grade of assistance.

Report of Tellers on Ballot for Officers of the Society
 The following is the report of the Tellers appointed to canvass the ballot for officers of the Society as presented to the Annual Meeting, January 20, 1926:
 "33 West 39th Street, New York, N. Y.

January 20, 1926

"To the Seventy-Third Annual Meeting

AMERICAN SOCIETY OF CIVIL ENGINEERS:

"The Tellers appointed to canvass the Ballot of Officers of the Society for 1926 report as follows:

"Total number of ballots received	3 396
"Deduct	
Ballots from members in arrears of dues	3
" unsigned	36
" with printed signatures	1
" with indecipherable signatures	4
"Total number not entitled to vote	44
"Ballots canvassed	3 352
Void ballots	0
Ballots counted	3 352

"For President:

GEORGE STEWART DAVISON	3 272
Scattering	17

"For Vice-Presidents:

Zone 1.—ALLEN HAZEN	3 118
Scattering	15
Zone 4.—WALTER LEROY HUBER	3 084
Scattering	10

"For Directors:

District No. 3.—FRANK MARTIN WILLIAMS	3 046
Scattering	3
District No. 5.—DONALD HUBBARD SAWYER	3 038
Scattering	9

District No. 7.—THOMAS CHALKLEY HATTON	3 037
Scattering	2

District No. 8.—ALONZO JOHN HAMMOND	3 036
Scattering	1

District No. 9.—CHARLES HOWARD PAUL	3 040
Scattering	1

District No. 12.—EDWARD GRAY TABER	3 047
Scattering	1

"W. F. REEVES, Chairman,
 "SHORTRIDGE HARDESTY,
 ROBERT HOPPEN, JR.,
 J. B. SNOW,
 PHILIP B. CRAIGHEAD,
 GEORGE W. GATES,
 W. H. BARTON,
 MILES I. KILLMER,
 CLAIRBORNE F. GARDNER,
 ROGER W. ARMSTRONG,
 FREDERICK H. POND,
 OTTO G. BUETTNER,
 E. R. NEEDLES,
 ALBERT W. BUEL,
 FRANCIS H. WRIGHT,
 LAZARUS WHITE,
 HARRY D. WINSOR,
 R. SPEIRS SAUNDERS,
 C. H. CROOKS,

"Tellers".

Rudolph Hering Medal

After considerable study as to the best form for the Rudolph Hering Medal, the officers of the Sanitary Engineering Division have determined upon a bronze medal approximately $2\frac{1}{4}$ in. in diameter. The Executive Committee of the Board of Direction at its meeting on December 14, 1925, approved of the change from a gold medal of smaller size and amended the rules of the



Award to correspond. The accepted design for the Hering Medal is shown herewith, depicting in obverse a likeness of Mr. Hering and in reverse the name of the Society, the Division, and the recipient. Great credit redounds to the Sanitary Engineering Division in thus honoring so uniquely the memory of an eminent engineer and at the same time serving so well to further the ideals that he represented.

Meeting of Executive Committee

The Executive Committee met at 10:40 A. M., December 14, 1925, at Society Headquarters, President Robert Ridgway in the chair; George T. Seabury, Secretary; and present, also, Messrs. Bush, Humphrey, Loweth, and Treasurer Hovey.

Many important matters were considered, among which was the budget for 1926. Some of the more important actions taken by the Committee are included elsewhere in these items.

Cultural and Business Studies for Engineering Students

Every engineer has definite views on engineering education and the mere suggestion of the topic seems to start his train of thought on the question of "What's wrong with this picture?" A compilation of answers to this question with its various implications, made by committees of the Society for the Promotion of Engineering Education, shows some interesting viewpoints in the diagnoses made by "recent graduates". For years there has been definite

sentiment toward "deepening" of engineering training; of late the tendency seems to be more toward a "broadening" policy. This finds expression in the recommendations of these graduates toward the fields of "culture" and "business". One questionnaire concerned the value of the cultural studies they had taken. Approximately 85% of the 3 400 replies were positively favorable, as, for example, "indispensable to intellectual development", "considerable value", and "sufficient value to warrant the time spent". Pursuing the question further with almost 1 500 inquiries the particular cultural interests were found to group themselves in Economics and Business 28%; Literature and English, 25%; History, Philosophy and the Social Sciences, etc., 18%; and Languages, only 3 per cent.

With this conclusive demonstration that even young engineers value "culture"—a premise that might not have been popular a generation ago—the inquiries to determine the proportion of interest in other non-engineering subjects assumes greater importance. Of 1 900 answers as to important omissions from college courses, about 51% specified business subjects, about 26% English, and about 8% "cultural subjects", including languages. Viewing the same matter from a different angle, namely, as to possible improvements in engineering courses, about 18% favored business training; 18% a lengthening of courses; 6% more English; and 16%, more cultural work.

Undoubtedly the motive behind these leanings toward a wider scope for training engineers is as much to improve the man as to better his specific education for a life work. Any profession is largely judged by the men comprising it and they in turn are judged more by their outside public contacts than by their technical work. The present tendencies toward liberalized engineering education should operate to improve the men socially and mentally and thus to better the standing of the profession before the public.

Again—Engineers' Salaries

The question of engineering pay is old yet ever new. It is interesting to every one because it touches every one. Statistics are variously interpreted, but always in a spirit of self-comparison, even subconsciously. If the figures seem to high, that is, too high to reflect his own case favorably, a man knows the data have been "hand-picked" or that he is underpaid, a fact which needs no demonstration; if they are too low, that is but another proof that they are of no value anyway. Even the Society through its Committees has not been able to obtain satisfying data on salaries.

Now comes the latest attempt on behalf of the investigations being conducted by the Society for the Promotion of Engineering Education with which the Society is co-operating. This deals exclusively with the technical graduate, but inclusively with graduates from all branches of engineering training. Every attempt was made to secure representative information. Certainly the inclusion of 5 000 items should cover a wide range and avoid any distinctly one-sided version. It will be noted further from the appended table that a considerable number of replies relate to each group listed. In this connection the smaller numbers for the older classes probably are proportional, in a measure at least, to the smaller registrations of earlier days; but even so the

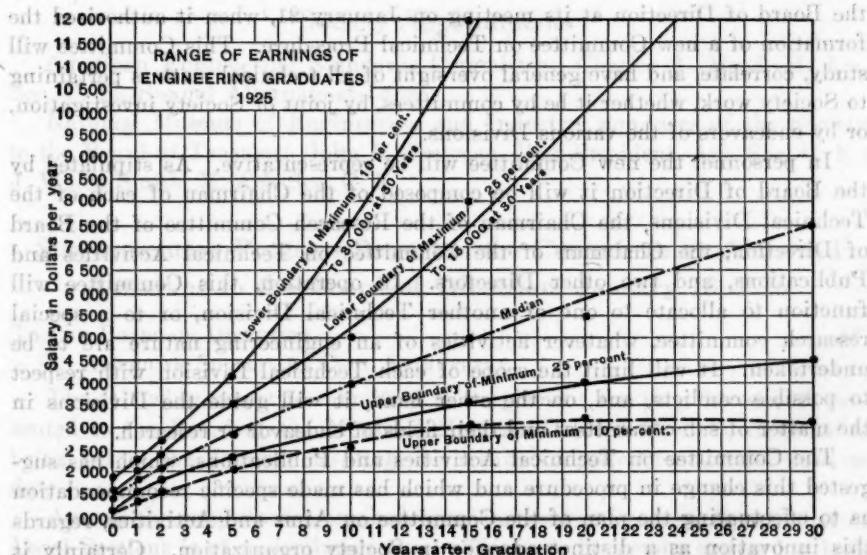
smallest number (116 for the year 1894) should give a wide enough "spread" for accuracy. In fact, the comparison with the next class bears out the contention of approximately representative figures.

ANALYSIS OF EARNINGS OF ENGINEERING GRADUATES AS OF JUNE 1, 1924.

Class.	Year since graduation.	Number reporting.	ANNUAL EARNINGS.							
			Minim-	Limit of first 10%.	Limit of first 25%.	Median.	Limit of first 75%.	Limit of first 90%.	Maxi-	
									Most fre-	
1924	0*	1 191	300	1 200	1 200	1 476	1 560	1 860	4 080	1 200
1923	1	1 218	420	1 404	1 580	1 800	1 980	2 280	5 100	1 800
1922	2	1 023	360	1 560	1 800	2 100	2 400	2 640	9 000	1 800
1919	5	309	1 500	2 100	2 400	2 860	3 500	4 200	25 000	3 000
1914	10	498	1 200	2 600	3 110	4 000	5 100	7 500	50 000	5 000
1909	15	480	1 700	2 700	3 600	5 000	8 000	12 000	45 500	6 000
1904	20	228	1 920	3 290	4 000	5 500	10 000	15 000	90 000	4 000
1894	30	116	1 980	8 000	4 500	7 500	15 000	30 000	100 000	6 000
Total		5 029								

* Beginning salary.

There is always the possibility, of course, that for civil engineers some adjustment of these averages would be in order. From other sources, however (as noted in the January, 1926, *Proceedings*, page 6), there are evidences of approximate equivalence of pay among all engineers. With all due reserva-



tions, therefore, the accompanying table and the graphical representation of the same facts, shown herewith, warrant a fair hearing and provoke thoughtful attention. In interpreting the curves it should be noted that the one marked "median" is not an average but the locus of the middle value in the various series.

In plotting the results the extreme values, maxima and minima, have wisely been omitted. The feeling persists that abnormally large or abnormally small salaries are in themselves the results of abnormal conditions to which no tabulation can do justice. For example, the man whose salary upon graduation was more than \$4 000 may have been an experienced man whose college education was deferred; or he may have been an ordinary man with extraordinary friends. Omitting the extremes, however, any tabulation shows more representative form; and so in the present case.

The curves extend only to 30 years beyond graduation. Within this range they show a definite, more or less regular trend—a fact that encourages credence. It should be one of the satisfactions of an engineer that he becomes increasingly valuable. Evidently at 50 or 55 years of age he is far from being a negligible economic factor. It is a pity that similarly trustworthy statistics for longer periods are not possible, for every engineer wonders when he will—or if he will—really get “old”.

As these curves represent conditions at a single period, they do not show the variation in engineers' salaries corresponding to the fluctuations in the value of the dollar. They do, however, give a definite and probably quite accurate answer to the question “What salary should I have received in 1924?”

Reorganization of Society's Technical Work

A progressive step of far-reaching importance—one that may be expected to revolutionize happily the progress of Society technical activities—was taken by the Board of Direction at its meeting on January 21, when it authorized the formation of a new Committee on Technical Procedure. This Committee will study, correlate, and have general oversight of all technical matters pertaining to Society work, whether it be by committees, by joint or Society investigation, or by endeavors of the various Divisions.

In personnel the new Committee will be representative. As stipulated by the Board of Direction it will be composed of the Chairman of each of the Technical Divisions, the Chairman of the Research Committee of the Board of Direction, the Chairman of the Committee on Technical Activities and Publications, and two other Directors. In operation, this Committee will function to allocate to one or another Technical Division, or to a special research committee, whatever activities of an engineering nature are to be undertaken. It will limit the scope of each Technical Division with respect to possible conflicts, and, on the other hand, it will guide the Divisions in the matter of sub-committees and their fields of endeavor or research.

The Committee on Technical Activities and Publications, which has suggested this change in procedure and which has made specific recommendation as to effectuating the plan of the Committee on Aims and Activities, regards this innovation as a distinct advance in Society organization. Certainly it will place on men who are presumably especially interested in one specific line of thought the opportunity to develop that line, through the medium of the Technical Divisions. It should prevent the technical work of the Society from becoming lopsided in any direction. On the other hand, it should guarantee that no essential feature of necessary work is omitted. All things

considered, members may be justified in expecting great things from this improved form of organization.

Arch Dam Tests Under Way

Members who have been informed previously of the ambitious plans for testing an arch dam at Stevenson Creek near Fresno, Calif., will be interested in the recent developments of this important project. A camp with its various accessories has been built. Already the machinery for excavating and mixing the concrete has been installed and several thousand cubic yards of rock excavated. The U. S. Bureau of Standards has generously assigned W. A. Slater, M. Am. Soc. C. E., a well-known experimenter in concrete, to have resident charge for the Committee. Other valuable contributions in personnel, equipment, and facilities have been made by the Southern California Edison Company, the U. S. Department of Agriculture, the Portland Cement Association, the Crucible Steel Company of America, the University of California, and the California Institute of Technology. The project is in charge of Engineering Foundation working through a committee of eminent engineers, members of the Society.

The personnel of the Committee has recently undergone a change through the retirement of its Chairman, Charles Derleth, Jr., M. Am. Soc. C. E., on account of ill-health and the election in his place of Charles D. Marx, Past-President, Am. Soc. C. E.

Society Appointments

American Engineering Standards Committee: Charles A. Mead, M. Am. Soc. C. E., Second Alternate-at-Large.

National Museum of Engineering and Industry, nominees of the Society to the Board of Trustees: John R. Freeman, Past-President, Am. Soc. C. E.; J. Waldo Smith, M. Am. Soc. C. E.

Supplementary Progress Report of the Committee on Aims and

Activities to the Board of Direction, January 18, 1926

To THE BOARD OF DIRECTION,

AMERICAN SOCIETY OF CIVIL ENGINEERS:

The following report is submitted to supplement the progress report* presented to the Board at the Montréal Meeting, October 12, 1925, in order to bring before the January Meeting the results of your Committee's work to date.

Among the subjects not touched upon in the first progress report, that of Local Sections is of major importance. This very important matter has been before your Committee since its organization and the present report is confined almost exclusively to a statement of its conclusions and recommendations as agreed upon up to the present.

* Proceedings, Am. Soc. C. E., December, 1925, Society Affairs, p. 393.

LOCAL SECTIONS

Your Committee endorses the present policy of the Society in the encouragement of the Local Sections. It recognizes their great possibilities for helpful service to the Society and to its members, some of the more noteworthy of these being the following:

- 1.—Providing an opportunity for the members of the Society to become better acquainted with each other.
- 2.—Stimulating the growth of the Society through appropriate contact with qualified engineers in each community.
- 3.—Assisting the Board of Direction in investigating and grading local candidates for membership.
- 4.—Maintaining sympathetic relations with the students of near-by engineering schools, thereby interesting them in the work of the Society.
- 5.—Keeping contact with local affairs that may be of interest to the members of the Society and keeping the Society informed of local developments that may merit its attention.
- 6.—Establishing means whereby the members of the Society in any locality may be assembled on any occasion calling for their united action or for discussion of matters of interest to the Society.
- 7.—Making provision whereby the local members of the Society may co-operate with other local organizations in matters of common interest.
- 8.—Promoting the presentation and discussion of Society papers.
- 9.—Carrying on technical activities of local interest or local application.
- 10.—Co-operating locally with certain general committees of the Society, as for example, the Committee on Professional Conduct and the Standing Committee on Fees and Salaries.

In approaching the question of Local Section activities it should be recognized at the outset that the conditions under which each Section must work are peculiar to itself and that for this reason each Section should enjoy the fullest possible freedom in solving its own local problems. The needs of the San Francisco Section are quite different from those of the Illinois Section. Those of the Kansas Section differ from those of New York. Those of Ohio are unlike those of Louisiana. The degree and type of organization needed, the number of meetings, the activity in community or technical affairs—in fact, every detail of the administration of Local Sections will vary in different localities depending on a number of factors.

In some cases it is evident that well-established local Engineering Societies are rendering excellent service to the profession and to the local members of the Society, as a result of which it is quite possible that the Local Sections may wish to limit their development and activities in order to prevent interference with the standing or activities of such existing local Societies.

In view of these considerations your Committee urges that the supervision and control of the Society over the activities of the individual Local Sections

be kept just as informal as practicable so that each Section may be free to adapt its work to the special needs of its locality.

To this end the Committee recommends a continuance of the present policy, which does not contemplate the Local Section as a political or administrative unit of the Society. Any attempt to utilize the Local Section as a political unit, either directly or incidentally, would mean the setting up of new and costly administrative machinery and would necessitate a closer and more uniform control by the Society, all of which would be distinctly harmful to the most natural development of the Sections.

What the Sections need is help in doing the things they find worth while and helpful for their members rather than the imposition upon them of administrative duties for which the Sections in general are not well organized and which can be more efficiently handled through existing machinery.

The present administrative organization of the Society moreover is thoroughly representative, and any attempt to duplicate it or parallel it through the Local Sections would be a needless waste and an embarrassment to the Sections in carrying on their useful work.

The working out of the problems involved in the development of the Local Sections is a matter of the utmost importance to the Society and your Committee has studied with great interest the methods employed by the Sections in approaching them. Much progress is being made and we would urge that the Society increase its efforts to help the Sections in this task.

In order to extend such help where it may be most needed your Committee feels that it would be desirable for the Board of Direction to have a more intimate knowledge of just what are the financial and other needs of the several Sections. A recommendation to this effect is embodied elsewhere in this report, by which the Committee on Local Sections may be enabled to learn annually just what are the special needs of the several Sections and to submit to the Board of Direction appropriate recommendations as to how the Society can help the Sections most effectively in carrying out their plans.

Your Committee recommends that the Board of Direction take cognizance of the very helpful work that has been done by the several local membership committees and record its appreciation of their services. As there appears to be some lack of full understanding by some members as to how these committees are appointed and how they can operate most helpfully, a recommendation on the subject is submitted elsewhere in this report.

RECOMMENDATIONS

- 1.—Recommended that each Section submit not later than October 1 of each year a statement of its activities during the preceding twelve months, including a financial statement of income and expenses, together with a budget of estimated income and requirements for the year beginning on the following January 1. The Committee on Local Sections should review these reports and budgets and transmit them to the Secretary of the Society together with its recommendations as to the relative allotments to be made to the several Sections not later than December 1, so that he may be able to submit

them to the Board of Direction in connection with the preparation of the Society Budget.

2.—Recommended that each Local Section provide means whereby to stimulate the presentation and discussion of Society papers by qualified members.

3.—Recommended that one or more local membership committees be appointed by the Director or Directors in each District, after consultation with the Local Sections, if there be any in the District, and that such committees act as advisory to the Board of Direction in the matter of qualifications of candidates for admission or advancement. Recommendations by such local membership committees to the Board of Direction should always be accompanied by a statement of the reasons therefor.

4.—Recommended that each Local Section have a Committee on New Members for the purpose of encouraging applications for membership by qualified engineers.

5.—Recommended that each Local Section provide for a Sub-Committee on Fees and Salaries to co-operate locally with the work of the Standing Committee on that subject.

6.—Recommended that the attention of the Local Sections be called to the function of the Committee on Professional Conduct with respect to the code of professional ethics, and that the Local Sections be encouraged to use their good offices in furthering and applying that code to the end of minimizing the possibility of violations thereof, and thereby prevent their reaching a serious stage.

In the opinion of the Committee the present rules for the conduct of the Conference of Local Sections are satisfactory.

With this supplementary report your Committee closes its work for the current year. It realizes, however, that it has made but a start toward the accomplishment of the broad mission assigned to it by the Board, and in view of the continuing interest and importance of that mission, and of the many aspects of the Society's work concerning which it has not yet been able to formulate conclusions, it recommends the appointment of a similar committee by the incoming administration to continue the studies that have here been undertaken.

Respectfully submitted,

COMMITTEE ON AIMS AND ACTIVITIES,

CHARLES H. PAUL, *Chairman*,

H. D. DEWELL, *Vice-Chairman*,

T. L. CONDRON,

C. M. SPOFFORD,

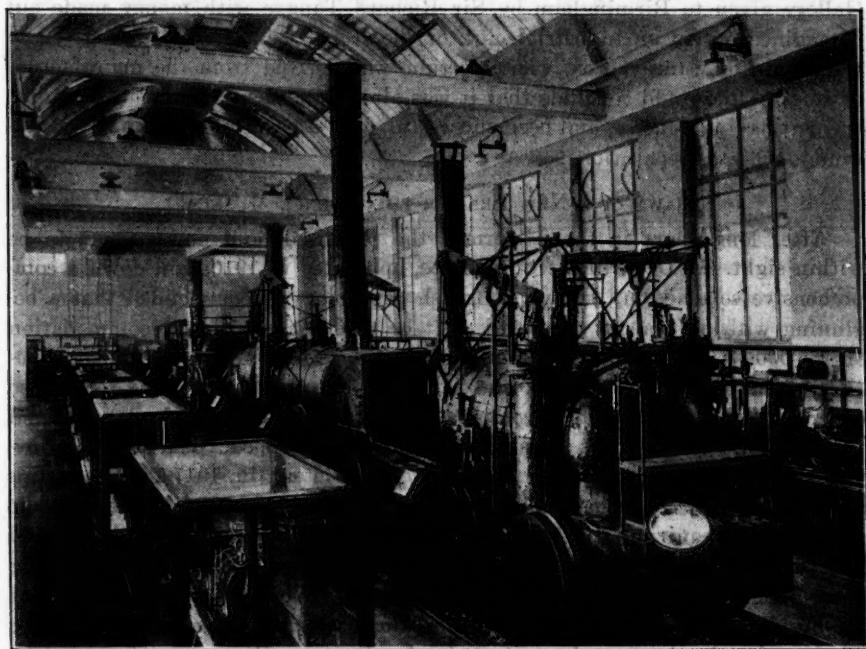
WILLARD T. CHEVALIER, *Secretary*.

The Science Museum, South Kensington, London

The Science Museum in London, England, is a typically British institution inasmuch as it can look back over a long and checkered career—nearly three-score years and ten—impinged upon and moulded by thought and action from without, yet maintaining within itself a core and purpose that has served to keep it young, so that to-day it is better organized and better equipped than it has ever been before. It will be time not ill spent for interested people in America who contemplate following the example of Great Britain and other nations, to consider awhile the rise and progress of the Science Museum.

DEVELOPMENT OF MUSEUM

Its origin goes back to the Great Exhibition of All Nations held in the Crystal Palace in 1851. When the Science and Art Department of the Committee of Council on Education was established in 1853, it considered the necessity for a Museum. This came into being in 1857 as the Museum of Science and Art, using as a nucleus objects from the Great Exhibition. At about the same time a Patent Office Museum was instituted independently.



DISPLAY OF OLD LOCOMOTIVES, "PUFFING BILLY" IN THE FOREGROUND.

When this latter institution languished its exhibits were turned over (in 1883) to the Science and Art Department, including such invaluable relics as Arkwright's cotton machine, the original locomotives, "Puffing Billy" and "Rocket", and Bell's "Comet" engine. Not until 1908 were the two Departments separated and the Science Museum began its individual existence at South Kensington.

BUILDINGS AT SOUTH KENSINGTON

Soon after the establishment of the original museum, permanent buildings began to be erected. It was the intention that all the collections, both Science and Art, should be housed together, but as time went on growth was so sustained that it began to be realized that the site was inadequate for the purpose. Exhibition space for the Science Collections was obtained in the galleries erected for the International Exhibition of 1862. Later, the Government sanctioned the erection of the striking pile of buildings that we see to-day, known as the Victoria and Albert Museum. All this time the Science Collection remained, like Cinderella, in obscurity. The collections, which were already of great value, were hidden away in temporary buildings; the entrance to them was of corrugated iron, irreverently referred to as the "shooting gallery."

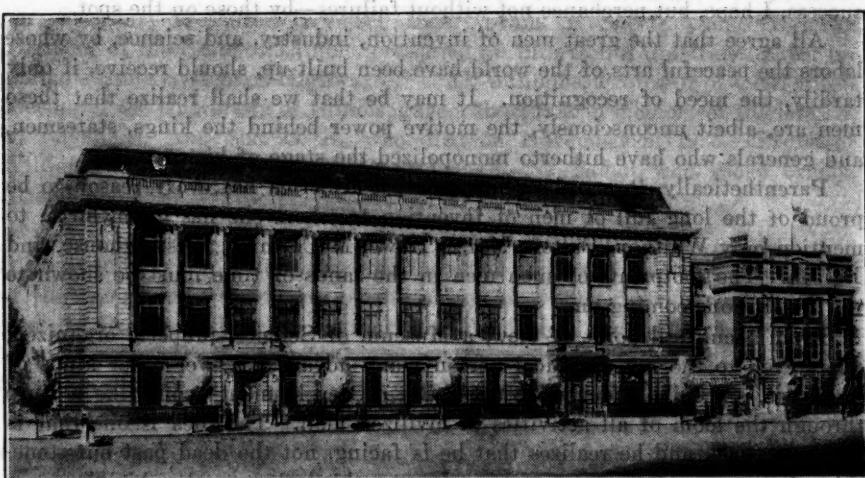
One cannot help wondering whether in time to come people will not look back and be surprised to learn how cavalierly Science—the very life blood of the nation's industries—was treated, while Art, which after all is ancillary thereto, was housed palatially. It only reflected the opinion of those immediately concerned, however, and to prove this we need only instance the Art Gallery given to Birmingham by Sir Richard Tangye with money made out of engineering in an industrial city, or the Royal College of Music given to the nation by Samson Fox, whose fortune was derived from the manufacture of steel. One would conclude that it was almost indecent to engage in industry, but having done so, and been successful, only a peace offering to the Muses would suffice as reparation.

DAWN OF A NEW ERA FOR THE SCIENCE MUSEUM

After long years in the wilderness the promised land now seemed to be within sight. A Department Committee, appointed in 1910, laid down a comprehensive scheme, but, knowing British psychology, recommended that a beginning with only about one-third of it be made, comprising accommodation of 135 000 sq. ft. of floor space on the existing site. The Government sanctioned this part of the scheme, and work was begun at once. The reinforced concrete shell was about half completed when the World War broke out, and little by little progress was arrested and finally was stopped. The need for Government office accommodation became very insistent in 1917-18, hence this shell was hastily made habitable by temporary expedients and handed over to departments requiring it. It was not until December, 1924, that the ground floor of this portion was handed over in the finished state. The remaining floors are now (December, 1925) being occupied. Work on another portion of the building—the frontage to Exhibition Road which has been an eyesore for nearly a decade—has now been started. As shown on the accompanying view, it will be a beautiful structure.

These buildings are admirably planned, dignified in their simplicity, and well lighted, with ample provision for electricity, gas, water, and compressed-air services on all floors. Part and parcel of the scheme is a Conference Hall for holding the gatherings of scientific societies, for congresses, and for lectures, while demonstration rooms each holding about 100 people are provided on every floor for the use of smaller gatherings such as school teachers bringing classes. The latter is a privilege greatly appreciated.

SCOPE OF THE MUSEUM. The Museum embraces broadly the applications of physical science, excluding natural history, geology, and medicine; these are provided for by other institutions, overlapping with which is avoided. It is not attempted to cover every application of physical science—indeed, there is obviously no finality in the matter. This leads to the observation that it is unwise to delimit the scope of such a Museum; it must be considered as an organism capable of growth as knowledge broadens.



MUSEUM BUILDING NOW UNDER CONSTRUCTION.

At present, the Museum comprises about thirty groups including, besides all the best known branches of engineering, various affiliated subjects, as fire protection, textile and agricultural machinery, paper making, marine architecture, astronomy, geography, optics, geodesy, meteorology, chemistry, and biology.

AIM AND PURPOSE

Speaking broadly, the aim of the Museum is to illustrate in three dimensions development from the earliest times to the present day in each of the groups and to present the illustrations in chronological order as far as practicable.

Very rarely is an object self-explanatory, and recourse is had to sectioning, or, if involving mechanism, to arranging it so that it can be put in motion. Such aids are backed up by printed descriptions and diagrams. In this way historical data, as well as information regarding construction and working, are conveyed to the visitor.

GUIDE-LECTURER

Even such aids with extensive catalogs had been felt to be inadequate and the services of a guide or lecturer had been in prospect for several years, but it was not till 1924, that an appointment was made. The lectures are given

twice daily, except Sundays, at convenient hours. The attendance thus far has justified the innovation. The prospect opened out is extensive, and much more may be done in the future in this direction, as experience dictates. Admission to the Museum is free; to the Library it is by ticket.

GENERAL OBSERVATIONS

This is not the place nor is it the time to offer any suggestions as to the aim or scope of a Museum of Science for America such as the one proposed for Engineering and Industry. The scheme will have to be worked out—with success, I hope, but perchance not without failures—by those on the spot.

All agree that the great men of invention, industry, and science, by whose labors the peaceful arts of the world have been built up, should receive, if only tardily, the meed of recognition. It may be that we shall realize that these men are, albeit unconsciously, the motive power behind the kings, statesmen, and generals who have hitherto monopolized the stage of history.

Parenthetically, it may be remarked that America has every reason to be proud of the long roll of men of invention to whom she has given birth, to mention only Whitney, Fulton, Morse, Howe, McCormick, Westinghouse, and Edison. The footprints of such men in the sands of time must be shown to the generations coming on.

From a cultural point of view, a Museum of Science, properly organized, offers even to the non-technical person many advantages over other kinds of museums, since its underlying idea—that of development—runs like a warp through the loom of all activities of civilized man. The idea is one that is easily grasped, and he realizes that he is facing, not the dead past but something living, something part of himself, something that touches his "business and bosom."

Again, in the world to-day, where but for the work of the engineer and scientist, millions could not continue to exist and where political power is in the hands of the million, it is the merest common sense to bring to the people the wisdom and understanding that will fit them to become good citizens. In achieving this task a Museum of Science can fill no mean rôle.

This leads to the reflection that such an institution could be made a center whence information as to scientific work that is being done in State Departments at public expense could be radiated by lecture or otherwise to the public. Such information is available, it is true, but in far too technical a dress. Something of this nature has been going on in the Government Pavilion at the British Empire Exhibition and has met with much acceptance. It behoves all engineers and scientific men, if they see anything in what has been said, to state that they want such a Museum, that they are determined to have it, and will put their shoulders to the wheel to get the money. The general public will be delighted when they see it an accomplished fact, but can not envisage it enough to demand it.

H. W. DICKINSON, *Honorary Secretary,*

The Newcomen Society for the Study of the
History of Engineering and Technology,
London, England.

Local Sections*

Buffalo.—November 10, 1925. At a luncheon meeting, Mr. John H. Feigel gave a report of the Fall Meeting of the Society at Montreal, Que., Canada, in October. The speaker of the day, William B. Powell, Traffic Engineer of the Buffalo Police Department, gave an address on the traffic problems of the city, illustrating his remarks with lantern slides. Attendance 35.

Central Illinois.—December 1, 1925. Annual Meeting. The following officers were elected: President, M. L. Enger; Vice-President, W. D. P. Warren; Secretary-Treasurer, G. W. Pickels. Frank T. Sheets, Chief Highway Engineer of the State of Illinois, presented an interesting illustrated paper on "Illinois State System of Highways." C. C. Williams, Professor of Civil Engineering of the University of Illinois, gave a short talk in memory of the late Ira O. Baker, M. Am. Soc. C. E., who died on November 8, 1925. Professor Williams was followed by Past-President A. N. Talbot who spoke briefly. Attendance 58.

Central Ohio.—December 11, 1925. Annual Meeting. Vice-President Milo S. Ketchum gave an interesting and inspiring talk on the activities and aims of the Society and the future of the profession. The following officers were elected: President, H. F. Schryver; Vice-Presidents, Walter Braun and F. H. Eno; Secretary-Treasurer, J. C. Prior. A number of members of the Ohio State University Student Chapter were present. Attendance 40.

Cincinnati.—December 7, 1925. A dinner meeting was held with Director Charles H. Paul as guest. Mr. Paul gave an interesting talk relating principally to activities of the Board of Direction and the Committee on Aims and Activities. Some points in the Minutes of the Local Sections Conference were also discussed. The Section agreed to offer a prize, consisting of the payment of the entrance fee and the first year's dues as a Junior in the Society to the Senior members of the Student Chapter of the University of Cincinnati. Attendance 20.

Colorado.—November 19, 1925. This was the Annual Joint Meeting of the Section with the Student Chapter of the University of Colorado, at Boulder. C. L. Eckel, Professor of Structural Engineering of the University of Colorado, summarized the recent developments in steel bridge construction throughout the country. Slides illustrated the paper and added to the interest of the subject. "The St. Lawrence Waterway to the Sea" was treated in an interesting way by Mr. Louis Plaehn, of the University of Colorado Student Chapter, who illustrated his remarks with lantern slides. H. J. Gilkey, Associate Professor of Civil Engineering of the University of Colorado, described the application of polarized light to the determination of shapes in structural members.

Connecticut.—December 11, 1925. A dinner meeting was held at the City Club at Hartford. President Robert Ridgway addressed the Section briefly on the subject of his experiences as President of the Society and afterward

* For list of Local Section Officers, Rules, etc., see 1925 Year Book, p. 48.

gave an instructive talk illustrated with lantern slides on "Some Features of New York's Rapid Transit Subways". Secretary George T. Seabury gave an interesting account of the work of the Society. The officers of the Yale University Student Chapter were present also as guests of the Section. Attendance 30.

Dayton.—December 14, 1925. Annual Meeting. The following officers were elected: President, J. K. Grannis; Vice-Presidents, F. J. Cellarius, N. Q. Sloan; and Secretary-Treasurer, C. H. Eiffert.

Georgia.—December 14, 1925. The following officers were elected for 1926: President, C. A. Smith; Vice-Presidents, Nisbet Wingfield, S. R. Young; and Secretary-Treasurer, J. Houstoun Johnston.

Iowa.—December 3, 1925. Annual Meeting, Des Moines. Committee reports were read and a report on the Local Sections Conference, at Cincinnati, Ohio, was presented by President E. L. Waterman. The following officers were elected: President, R. W. Crum; Vice-President, H. R. Green; and Director, O. W. Crowley. Mr. R. B. Kittredge was re-appointed Secretary-Treasurer. A discussion on "County Road Programs" was led by Mr. H. R. Green. After a dinner at the Grant Club, Frank T. Sheets, Chief Highway Engineer, Division of Highways, Department of Public Works and Buildings of the State of Illinois, addressed the Section. The attendance at the business meeting was 19, and 30 members and guests listened to the address of the evening.

Kansas.—Fifth Annual Meeting. The following officers were elected: President, W. V. Buck; Vice-President, P. L. Brockway; and Secretary-Treasurer, F. W. Epps. An interesting talk was given by Mr. William Allen White, of Emporia. Attendance 20.

New York.—December 4, 1925. The Section participated in a Joint Meeting at the Engineering Societies Building on "Industrial Co-operation" with the War Department. Elbert H. Gary, Chairman of the Advisory Board of the New York Ordnance District, presided and the following speakers addressed the meeting: Hon. Dwight F. Davis, Secretary of War, Hon. Hanford MacNider, Assistant Secretary of War, Gen. James G. Harbord, President, Radio Corporation of America.

December 16, 1925. Resolutions were adopted by the Board of Directors of the Section, on December 11, 1925, calling attention to the fact that the Engineering Profession is not represented on any of the sub-committees of the Commission for the Re-Organization of the New York State Departments, and urging that such members of the Engineering Profession as may be best equipped to advise on the technical problems connected with the re-organization be included in the sub-committees. These resolutions were unanimously endorsed. The subject of the evening was "Suburban Rapid Transit" and papers were presented by the following speakers: H. M. Brinckerhof, Engineer for the Westchester County Transit Commission; Hobart Rawson, Special Engineer of the Long Island Railroad Company; B. H. Saunders, Chairman of the North Jersey Transit Commission; and Maj. Elihu C. Church, Trans-

portation Engineer of the Port of New York Authority. Discussion followed.
Attendance 175.

January 6, 1926. The meeting was devoted to a discussion of "New Methods of Subway Construction", and was addressed by the following: Robert Ridgway, Chief Engineer, Board of Transportation, New York, N. Y.; H. E. Ehlers, Director, Department of City Transit, Philadelphia, Pa.; Paul G. Brown, Engineer, Keystone State Construction Company, Philadelphia, Pa.; Col. John R. Slattery, Deputy Chief Engineer, Board of Transportation, New York, N. Y.; Frederick L. Cranford, Contractor, New York, N. Y.; and Lazarus White, President, Spencer, White and Prentis, New York, N. Y. Mr. Waldo C. Briggs discussed the subject from the floor. Attendance 325.

Philadelphia.—December 7, 1925. The meeting was preceded by a dinner at which thirty-five members were present. After the business meeting, an "Experience Meeting" was held at which President Sherman invited those present to describe interesting problems they had met in their work.

William Easby, Jr., Consulting Civil and Sanitary Engineer, described new developments in centrifugally cast-iron pipe which he is using in water-works installation at Downingtown, Pa. William S. Pardoe, Professor of Hydraulic Engineering at the University of Pennsylvania, described an unreinforced concrete water pipe which has been in use for some time in Italy. Walter Samans, Chief Engineer, Atlantic Refining Company, described interesting features in the reconstruction of a railroad bridge. Attendance 40.

Rochester.—November 27, 1925. At a dinner meeting held at the University Club the Section adopted the plan of awarding a prize consisting of entrance fee and one year's dues as Junior of the Society to a member of the Student Chapter at Cornell University presenting the best paper on some engineering or other technical subject. The resolution relative to advertising for professional engineering services which was adopted by the Board of Direction of the Society at its Summer Meeting in July, 1925, was endorsed. A report was also presented by the Committee on Affiliation Plan of the Rochester Section with the Rochester Engineering Society. Attendance 12.

Sacramento.—October 27, 1925. A committee of five structural engineers was appointed to assist the City Engineer and City Architect in the preparation of a building code for the City of Sacramento. Attendance 24.

November 3, 1925. George G. Radcliffe, Chairman of the State Board of Control, addressed a Joint Meeting of the Section and the Sacramento Chapter, American Association of Engineers, on the political history of Los Angeles Harbor, telling of the legislative fight which led to its construction and to the defeat of the plan of the late Collis P. Huntington, F. Am. Soc. C. E., to make a harbor at Santa Monica. Attendance 35.

November 24, 1925. Paul Bailey, Deputy State Engineer, spoke on the work his office is doing in the investigations of water resources of California. Attendance 27.

December 1, 1925. Culbert W. Faries, Secretary of Feather River Power Company, addressed a Joint Meeting of the Section and of the Sacramento Chapter, American Association of Engineers, on the Buck Creek Project of his

Company. This will be the highest head hydro-electric development in the United States, the plant being designed to operate under a static head of 2,572 ft. Attendance 31.

December 8, 1925. Mr. J. Burdette Brown reported on recent investigations made by him of the cost of power for pumping irrigation water in Antelope Valley for alfalfa. Pumping heads varied from 65 to 95 ft., and the cost of power per ton of alfalfa ranged from \$1.90 to more than \$3.00. Attendance 24.

December 15, 1925. Norman M. Stinemann, Structural Engineer for the Portland Cement Association, addressed the Section on "Preparing a City Building Code and Keeping It in Order". Attendance 25.

December 22, 1925. The Second Annual "Jinks" was held at the Sacramento Hotel, Messrs. C. S. Pope, E. N. Bryan, D. Butler, and R. U. St. John presenting a skit representing a meeting of the Section in 1950, when engineers shall have "come into their own". With excessive formality "annual reports" were made, detailing the activities of engineers in running the State and in reversing Nature, and in describing some of the pet schemes of members. Attendance 47.

December 29, 1925. The Section endorsed, subject to the approval of the Los Angeles Section, the proposed plan for redistricting, recently presented to the Board of Direction. Attendance 21.

St. Louis.—November 23, 1925. The following officers were elected: President, S. Bent Russell; Second Vice-President, James C. Travilla; and Secretary-Treasurer, Harry E. Frech; Member of Joint Council, William C. E. Becker. B. H. Piepmeyer, Chief Engineer of the Missouri State Highway Commission, gave an interesting address on "Highways of Missouri". Attendance 47.

San Francisco.—October 20, 1925. Sixty members and guests were present at the dinner which preceded the business meeting. The Section unanimously adopted the plan of offering an annual prize to each of the Student Chapters at the University of California and Stanford University to consist of initiation fee and first years' dues as Junior in the Society with a Junior pin suitably engraved. A report of the Committee on Irrigation Development was presented. Leon T. Eliel, Pacific Representative, Fairchild Aerial Surveys, Inc., New York City, who was the speaker of the evening, addressed the Section on "Aerial Methods for Topographic Mapping". Attendance 75.

Spokane.—October 9, 1925. A business meeting was held and matters relating to a Construction Division, "Management Week", and "Waste in Distribution" were discussed. A Membership Committee was also appointed. Attendance 16.

November 13, 1925. Reports were given by the Committees on Waste in Distribution and on Prizes for Student Chapters. Attendance 11.

Utah.—December 7, 1925. Following an informal dinner a business meeting was held at the University Club at Salt Lake City, in which matters of interest to the Section were transacted. Attendance 18.

Western Washington.—September 28, 1925. R. K. Tiffany, Supervisor of Hydraulics, Olympia, addressed the Section on the subject of "Administration of the Water Code."

October 26, 1925. Charles E. Andrew, State Bridge Engineer, Olympia, described in detail "The State Bridge Program", including the Vantage Ferry Cantilever Bridge soon to be constructed.

November 28, 1925. J. D. Blackwell, City Engineer of Seattle, spoke on "The Engineering Activities of the City of Seattle", describing particularly the intricate problems before his office relative to arterial highways and the proposed new sewer system involving expenditures of many millions of dollars.

December 14, 1925. This was the first Joint Meeting of the Local Sections of the Founder Societies in this region. Preceding the meeting a dinner was held at the Chamber of Commerce at which about 150 members and guests were present. Entertainment was provided by the Student Chapter from the University of Washington. The Presidents of the Sections represented, addressed the meeting urging closer co-operation among the Sections and approving holding a Joint Meeting at least once a year. The Skagit Engineering Commission composed of Messrs. Jacobs, Hill, and Morse, described fully the plans for further development of Seattle's power project on the Skagit River involving an ultimate outlay of \$50 000 000 and on which \$11 000 000 has now been expended. Discussion of the subject followed. Attendance about 350.

Student Chapters*

University of Georgia.—September 30, 1925. After a business meeting at which several committees were appointed, an address was given on "The Dayton Ohio Flood Project", by Mr. Bellew, who was Manager of the Dayton Power and Light Company at the time this work was accomplished. Addresses were also given by members of the Chapter. Attendance 50.

October 13, 1925. Letters were read from engineers accepting invitations to speak before the Chapter and representatives were appointed to attend the Norcross Memorial exercises in Atlanta on October 30, 1925. Attendance 22.

October 29, 1925. The meeting was addressed by Robert Ridgway, President, Am. Soc. C. E., who spoke on "Construction of the New York Subways", illustrating his talk with slides showing details of the work. Attendance 80.

November 10, 1925. A report was made by the delegates who attended the Norcross Memorial exercises. Professor C. M. Strahan gave a talk descriptive of his travels in Europe. Attendance 21.

University of Minnesota.—December 3, 1925. After a business meeting the Chapter was addressed by Mr. Walter H. Wheeler, who spoke on the Mendota Bridge, describing the various difficulties which arose from the time of choosing the type of structure to the actual construction.

* For list of Student Chapters, Officers, etc., see 1925 Year Book, p. 54.

Engineering Societies Library

The services of the Engineering Societies Library are available to all members who wish searches, copies, translations, etc., or advice on technical literature. A collection of modern books is also available for loan to members in North America, at moderate rentals. Correspondence should be addressed to the Director, Engineering Societies Library, 29 West 39th Street, New York, N. Y., who will gladly give information concerning the charges for the various kinds of work. A more comprehensive statement in regard to this matter will be found on pages 71 and 72 of the Year Book for 1925.

Book Notices*

(December 1 to December 31, 1925)

Aus der Praxis des Veranschlagens von Eisenbetonhauten. By K. Lerche. Berlin, Wilhelm Ernst & Sohn, 1925. 42 pp., diagrams, tab., 10 x 7 in., paper. 3 r. m.

Because a contractor is seldom able to make an exact determination of the quantities of concrete, steel, and lumber required for a reinforced concrete building before the closing of the bids, the required quantities are estimated. This book is intended to assist in arriving at accurate estimates by short methods.

Bemessungsverfahren. By B. Löser. Berlin, Wilhelm Ernst & Sohn, 1925. 149 pp., diagrams, tab., 10 x 7 in., paper. 6 r. m.

A collection of typical numerical examples illustrating the purposes and effects of the new German standards for reinforced concrete structures is also a guide to correct methods of calculation. Numerous tables that expedite the work of the designer are included.

Chemische Technologie des Wassers. By W. Olszewski. Berlin und Leipzig, Walter de Gruyter & Co., 1925. 138 pp., illus., diagrams, 6 x 4 in., cloth. 1.25 g. m.

In this concise account of methods for the purification of water for domestic and industrial use and of sewage and waste waters, chemical, biological, and mechanical methods are described, also methods of water analysis.

Drainage and Flood-Control Engineering. By George W. Pickels. N. Y., McGraw-Hill Book Co., 1925. 450 pp., illus., diagrams, maps, tab., 9 x 6 in., cloth. \$4.00.

Written primarily as a textbook for courses in land reclamation by drainage, this book treats both of the improvement of small areas of cultivable land by under-drainage and of the reclamation of large areas of wet and overflow lands by surface drainage and by flood control. The author discusses the principles of hydrology, hydraulics, and soil physics, as they apply to the work of the drainage engineer, treats the practical methods for draining and for controlling floods, and devotes chapters to excavating machinery and to drainage law.

Hephaestus; or, The Soul of The Machine. By E. E. Fournier D'Albe. N. Y., E. P. Dutton & Co., 1925. 76 pp., 7 x 5 in., cloth. \$1.00.

This is an interesting original study of the relations between man and his machines. How the age of machinery has come about and what influence machinery will eventually have on society is explained in striking fashion.

L'Emploi des Indicateurs Colorés; La Détermination Colorimétrique de la Concentration des Ions Hydrogène. By I. M. Kolthoff. Translated from the Third German Edition by Edmond Vellinger. Paris, Gauthier-Villars et Cie., 1926. 250 pp., diagrams, tab., 9 x 6 in., paper. 50 fr.

* The statements made in these notices are taken from the books themselves, and this Society is not responsible for them. Unless otherwise specified, the books in this list have been donated by publishers.

The simplicity and rapidity of the color indicator method of measuring the concentration of hydrogen-ions in aqueous solutions have led to a wide extension of its use for this important purpose. This book gives a survey of the various methods used and studies their application under a wide variety of conditions.

Holzdaubenrohre. By Herbert Rabovsky. Berlin, V. D. I. Verlag, 1926. 68 pp., illus., tab., graph, 8 x 6 in., paper. 8 r. m.

This monograph calls the attention of European engineers to the possibilities of wood stave pipe, as yet little known to them. It summarizes home and foreign practice, describes pipe lines of importance, and discusses theory.

Life of Elbert H. Gary; the Story of Steel. By Ida M. Tarbell. N. Y., D. Appleton & Co., 1925. 361 pp., illus., portfolios, 9 x 6 in., cloth. \$3.50.

Miss Tarbell's biography of the head of the United States Steel Corporation is not only an interesting life of the great industrial leader, but also a history of an important period in the development of a basic industry, beginning with the first combines in the early Nineties, and tracing the changing consolidations, the formation of the Steel Corporation, and the development of its policies toward labor and the public.

Metallurgie. By Aug. Geitz. Berlin und Leipzig, Walter de Gruyter & Co., 1925. 2 v., illus., diagrams, 6 x 4 in., cloth. 1.25 g. m., each.

This convenient and brief survey of the metallurgy of the metals, excluding iron, gives the methods of extraction, history, occurrence, properties, uses, and statistics of each metal. Rare metals and those without technical importance are included.

Neuere Methoden zur Statik der Rahmentragwerke und der Elastischen Bogenträger; Bd. 1: Der durchlaufende Rahmen. By A. Strassner. Third Edition. Berlin, Wilhelm Ernst u. Sohn, 1925. 152 pp., diagrams, 10 x 7 in., paper. 9 mk.

This treatise on the statics of framed structures and elastic arches is designed to relieve the practicing engineer of labor by presenting time-saving methods of calculation. It discusses continuous beams and framed structures and the design of buildings with special reference to the use of reinforced concrete.

Niagara in Politics; A Critical Account of the Ontario Hydro-Electric Commission. By James Mavor. N. Y., E. P. Dutton & Co., 1925. 255 pp., 8 x 5 in., cloth. \$2.00.

Professor Mavor's work is a frank criticism of the Commission, which he condemns on grounds of both public policy and economic advantage.

Patents; Law and Practice. Third Edition. 1924. 56 pp.

Trade-Marks, Trade Names, Unfair Competition. Fourth Edition. 1925. 48 pp. N. Y., Richards & Geier, 277 Broadway. 9 x 6 in., paper.

These pamphlets provide a convenient summary of the patent and trade-mark laws of the principal countries of the world. They are intended to give laymen the more important facts, as a guide in meeting the problems that arise most frequently.

Selling Construction Service. By Charles F. Dingman. N. Y., McGraw-Hill Book Co., 1925. 158 pp., illus., 7 x 4 in., fabrikoid. \$2.50.

The author of this brief outline of the principles that underlie successful advertising and selling of construction service, confines himself to fundamentals, as he intends the book for contractors rather than for specialists.

Smoke, A Study of Town Air. By Julius B. Cohn and Arthur G. Ruston. New Enlarged Edition. London, Edward Arnold & Co.; N. Y., Longmans, Green & Co., 1925. 108 pp., illus., tab., 9 x 6 in., cloth. \$3.20.

The authors do not consider the cause of smoke nor the cure for it, but confine themselves to data on the imperfect combustion of coal and to the consequences. The book discusses the composition of soot, the quantity emitted from chimneys and its effect on vegetation and light; the effects of fine gases on structures and vegetation; town fog; the dispersal of soot; and the plant as an index of smoke pollution. The facts presented should be helpful to every one interested in smoke abatement.

Usines Hydroélectriques. By Charles L. Duval and J. L. Routin. Paris, J. B. Bailliére et fils, 1925. 512 pp., illus., diagrams, 9 x 6 in., paper. 60 fr.

This general textbook on hydro-electric power plants describes the various apparatus, explaining the reasons for its choice, its dimensions, and its use. Both hydraulic and electric features are discussed. The book is based on the course at the Ecole Supérieure d'Électricité.

—engines and instruments to build machines which will do nothing but calculate and not see fit to calculate above it or let good engineers scheme at all except to nothing which has been studied before and to write a good book and nothing important and sufficient to give the reader a solid knowledge and

Current Civil Engineering Literature

how to utilize them and to make them useful to society off other purposes and interests, nothing original has come to my mind in recent years which seems to merit notice.

Key to Abbreviated References to Publications Indexed*

Abbreviated References.	Publication.	Place.
Am. C. Inst.....	American Concrete Institute, Proceedings (Y.)	Detroit
A. I. E. E.	American Institute of Electrical Engineers Journal (M.)	New York
A. R. E. A.	American Railway Engineering Association, Proceedings (Y.)	Chicago
A. S. T. M.	American Society for Testing Materials, Proceedings (Y.)	Philadelphia
Am. Soc. C. E.	American Society of Civil Engineers, Proceedings (M.)	New York
Am. Soc. Mun. Impvts.	American Society for Municipal Improvements, Proceedings (Y.)	
Am. W. W. Assoc....	American Water Works Association, Journal (Bi-M.)	New York
Am. Wood Prs. Assoc.	American Wood Preservers Association, Proceedings (Y.)	Baltimore
Ann. P. & C.	Annales des Ponts et Chaussées (Bi-M.)	Paris
Ann. T. P. Belg.	Annales des Travaux Publics de Belgique (Bi-M.)	Brussels
Assoc. Ing. Gand....	Annales de l'Association des Ingénieurs sortis des Ecoles Spéciales de Gand (Q.)	Ghent
Bost. Soc. C. E.	Boston Society of Civil Engineers, Journal (M.)	Boston
Can. Engr.	Canadian Engineer (W.)	Toronto
Cornell C. E.	Cornell Civil Engineer (M.)	Ithaca
Dock & Harbour....	Dock and Harbour Authority (M.)	London
Eng.	Engineering (W.)	London
Eng. & Contr.	Engineering and Contracting (W.)	Chicago
Eng. Inst. Can.	Engineering Institute of Canada, Journal (M.)	Montreal
Eng. N. R.	Engineering News-Record (W.)	New York
Engrs. Soc. W. Pa.	Engineers' Society of Western Pennsylvania, Journal (M.)	Pittsburgh
Engr.	Engineer (W.)	London
Engrs. & Eng.	Engineers and Engineering, Engineers' Club of Philadelphia (M.)	Philadelphia
Gen. Civ.	Le Génie Civil (W.)	Paris
Gesund. Ing.	Gesundheits Ingenieur (W.)	Munich
Inst. C. E.	Institution of Civil Engineers Minutes of Proceedings (Q.)	London
Inst. Mun. & Co. Engrs.	Institution of Municipal and County Engineers, Journal (W.)	London
Int. Ry. Cong. Assoc....	International Railway Congress Association, Bulletin (M.)	Brussels
Land. Arch.	Landscape Architecture (M.)	Harrisburg
Mech. Eng.	Mechanical Engineering (M.) Journal of the American Society of Mechanical Engineers	New York
Mil. Engr.	Military Engineer (M.)	Washington
Min. & Metal.	Mining and Metallurgy (M.) American Institute of Mining Engineers	New York
Mun. & Co. Eng.	Municipal and County Engineering (M.)	Indianapolis
N. E. W. W. Assoc.	New England Water Works Association, Journal (M.)	Boston
N. Y. R. R. Club.	New York Railroad Club, Proceedings (M.)	Brooklyn
Oest. Ing. Arch. Ver.	Oesterreichischer Ingenieur und Architekten Verein, Zeitschrift (F.)	Vienna
Power	Power (W.)	New York
Rev. Gen.	Revue Générale des Chemins de Fer (M.)	Paris
Ry. Age.	Railway Age (W.)	New York
Ry. Eng. & Maint.	Railway Engineering and Maintenance (M.)	Chicago
Ry. Rev.	Railway Review (W.)	Chicago
Schw. Bauz.	Schweizerische Bauzeitung (W.)	Zurich
Sci. Am.	Scientific American (M.)	New York
Soc. Ing. Civ. Fr.	Société des Ingénieurs Civils de France, Mémoires et Comptes Rendus (Q.)	Paris
Ver. deu. Ing.	Verein deutscher Ingenieure, Zeitschrift (W.)	Berlin
West. Ry. Club.	Western Railway Club, Proceedings (M.)	Chicago
West. Soc. Engrs.	Western Society of Engineers, Journal (M.)	Chicago
Zeit. Bau.	Zeitschrift für Bauwesen (Q.)	Berlin
Z. d. Bauver.	Zentralblatt der Bauverwaltung (W.)	Berlin

* Y = Yearly; Q = Quarterly; M = Monthly; F = Fortnightly; W = Weekly.

ausserdem solche auf niedrigem Stande zweier schweizerischer Hochschulen sind, das aufmerksamkeit durch zwei arten von bauwissenschaftlichen arbeiten zu setzen ist, die einen hohen wissenschaftlichen stand und die andere mit einer gewissen praktischen ausbildung sind.

A. Applied Sciences**a. Processes of Calculation**

- 2. Graphical and Nomographical Processes** Moments in Restrained and Continuous Beams by the Method of Conjugate Points.* F. E. Richart. Am. Soc. C. E. Dec., '25. Nomogramm für die Dimensionierung von städtischen Kanalnetzen.* (Nomogram for Proportioning Municipal Sewer Pipe Lines.) J. Wachsmann. Gesund. Ing. Nov. 28, '25.

B. Applied Mechanics**a. Mechanics of Solids (Strength of Materials)****4. Riveted Systems**

- Die Berechnung von Trägern mit unsymmetrischem Querschnitt auf Grund der Theorie der Scherkräfte.* (Calculation of Beams with Unsymmetrical Cross Section on the Basis of the Theory of Shearing Forces.) Rich. Sonntag. Z. d. Bauver. Nov. 4, '25. Berechnung der Beanspruchung eines Glockenstuhls durch schwingende Glocken.* (Calculation of the Strains on a Bell Frame, due to Swinging Bells.) Wöhrl. Z. d. Bauver. Nov. 25, '25.

Erläuterungen zum Normblatt über Knickung (Oenorm-Entwurf B 6203).* (Explanations of the Standard Sheets for Column Stresses and Buckling.) Hartmann. Oest. Ing. Arch. Ver. Oct. 30, '25.

b. Hydraulics**2. Physical Hydraulics**

- Side Channel Spillways: Hydraulic Theory, Economic Factors, and Experimental Determination of Losses. Discussion. C. H. Howell and H. B. Muckleston. Am. Soc. C. E. Dec., '25.

3. Industrial Hydraulics

- Power Development in the Middle West. Discussion. Harry K. Rubey. Am. Soc. C. E. Dec., '25.

Le Barrage Wilson, sur le Tennessee, et l'Usine Hydro-électrique de Muscle Shoals, Etats-Unis.* (The Wilson Dam on the Tennessee and Muscle Shoals Hydroelectric Plant, U. S. A.) Gen. Civ. Nov. 7, '25.

Zur Wasserbilanz des Kraftwerks Wäggital.* (The Water Supply Balance of the Wäggital Power Plant.) Schw. Bauz. Oct. 24, '25.

Beiträge zum Problem der Abdichtung von Druckstollen.* (Contributions to the Problem of Preventing Leakage out of Pressure Conduits.) A. Feller. Schw. Bauz. Oct. 31, '25.

Das Kraftwerk Amsteg der Schweizerischen Bundesbahnen.* (The Amsteg Power Plant of the Swiss Federal Railroads.) Hans Studer. Schw. Bauz. Serial beginning Nov. 7, '25.

Neuere Turbinen von F. Schichau. (Recent Turbines Built by F. Schichau.) H. Korn. Ver. deu. Ing. Nov. 7, '25.

Das Wasserkraftwerk Partenstein in Oberösterreich.* (Partenstein Hydro-Power Plant in Upper Austria.) Georg v. Troeltsch. Ver. deu. Ing. Nov. 28, '25.

4. Dams

Bekämpfung der Sohlenauskolkung bei Wehren durch Zahnschwellen.* (Counteracting the Scouring of the River Bottom by Weirs with Toothed Sills.) Theodor Rehbock. Ver. deu. Ing. Oct. 31, '25.

c. Pneumatics**3. Industrial Pneumatics**

L'Hydrautomat. Nouvel Appareil pour l'Elevation de l'Eau.* (The Hydrautomat, a New Device for Raising Water.) Gen. Civ. Nov. 21, '25.

C. Materials of Construction and General Processes**a. Lime, Cement, Mortar, Concrete, Brick, Bitumin, Timber, etc.**

Heating of Aggregates Necessary When Placing Concrete in Winter.* A. M. Bouillon. Ry. Eng. & Mafn. Dec., '25.

Le Béton Armé de Barres Crénélées. Expériences d'adhérence.* (Concrete Reinforced with Deformed Bars. Bonding Tests.) P. Caufourier. Gen. Civ. Nov. 14, '25.

Zellenbeton.* (Cellular Concrete.) Saller. Z. d. Bauver. Nov. 4, '25.

f. Rock Excavation, Mining, Rock Removal

Blasting and the Use of Explosives. Frank F. McLaughlin. (Paper read before National Safety Council.) Eng. & Contr. Nov. 18, '25.

Abstract of Institute Papers. Min. & Metal Dec., '25.

Elektrische Förderanlagen im Bergbau.* (Electric Transportation Appliances in Mining.) Felix Kuderna. Oest. Ing. Arch. Ver. Nov. 18, '25.

g. Execution of Works, Specifications

2. Of Concrete Concrete House Construction Methods in Holland.* (From Concrete and Constructional Engineering.) Eng. & Contr. Nov. '25, '25.

4. Of Metal

First-Story Columns Cut Away in Building Enlargement.* Eng. N. R. Dec. 10, '25.

Launching as Reinforcement for Steel Beams.* C. R. Young. Can. Engr. Dec. 22, '25.

5. Of Reinforced Concrete Report of the Joint Committee on Standard Specifications for Concrete and Reinforced Concrete. Discussion. J. A. Kitts. Am. Soc. C. E. Dec., '25.

Floor Construction for Hotels.* R. L. Cullum. (From *Turner Constructor*.) Eng. & Contr. Nov. 25, '25.

Die neuen Bestimmungen des Deutschen Ausschusses für Eisenbeton vom September, 1925.* (New Regulations by the German Committee on Reinforced Concrete, dated September, 1925.)* Lorenz-Meyer. Z. d. Bauver. Sept. 30, '25.

x. Miscellaneous

Is Winter Work Profitable?? A. M. Bouillon. Ry. Age Dec. 5, '25.

h. Foundation, Bridge, Piers, and Abutments

Difficult Foundation Work.* J. C. Brady. Eng. & Contr. Nov. 18, '25.

f. Cofferdams

Rostgefahr und Lebensdauer eiserner Spundwände.* (Danger from Rusting and the Life of Iron Sheet Piling.) Kölle. Z. d. Bauver. Nov. 11, '25.

k. Tunnels and Tunneling-Shield

Lining Procedure in Holland Tunnel.* Eng. N. R. Dec. 3, '25.

D. Highways

c. Construction

Varied Uses of Asphalt in Construction and Maintenance. William H. Woodward. (Paper read before Fourth Asphalt Paving Conference.) Mun. & Co. Eng. Nov., '25.

Experimental Pavements in Boro of Queens, New York City. E. E. Butterfield. (From paper read before Am. Soc. Mun. Impvts.) Mun. & Co. Eng. Nov., '25.

Design of Cement Concrete Pavements.* A. T. Goldbeck. (Paper read before Univ. of Michigan.) Can. Engr. Serial beginning Nov. 24, '25.

Design of Cement Concrete Pavements.* A. T. Goldbeck. (Paper read before Univ. of Mich.) Can. Engr. Dec. 1, '25.

Surface Treatment of Gravel Roads. J. T. Bullen. (Paper read before Annual Asphalt Paving Conference.) Can. Engr. Dec. 1, '25.

Northwest Grade Separation, Toronto.* Can. Engr. Dec. 8, '25.

The Maintenance of Asphalt Pavements. Hugh W. Skidmore. (Paper read before Fourth Asphalt Pav. Conference.) Can. Engr. Dec. 22, '25.

Concrete Street Paving in Chicago.* Eng. N. R. Dec. 24, '25.

d. Maintenance

The Maintenance of Asphalt Pavements. Hugh W. Skidmore. (Paper read before Fourth Asphalt Paving Conference.) Mun. & Co. Eng. Nov., '25.

The Salvage Value of Brick Pavements. A. S. Mirick. (Paper read before Am. Soc. Mun. Impvts.) Mun. & Co. Eng. Nov., '25.

Economic Uses of Refined Road Tar.* John S. Crandell. (Paper read before Can. Good Roads Assoc.) Can. Engr. Dec. 8, '25.

f. Tree Planting

Method of Planting Coniferous Trees. C. R. Tillotson. Eng. & Contr. Nov. 18, '25.

g. Machinery and Tools

New Snow-Motor in Service.* George R. Cullen. Can. Engr. Dec. 22, '25.

h. Vehicles, Automobiles, Traffic

Economy Should Govern Selection of Highway Types. William H. Connell. Mun. & Co. Eng. Nov., '25.

The Factors to be Considered in the Selection of Transport for Public Cleansing Work. J. A. Priestley. Inst. Mun. & Co. Eng. Nov. 17, '25.

x. Miscellaneous

Paving Plant Inspection. W. J. Emmons. (Paper read before Fourth Asphalt Paving Conference.) Mun. & Co. Eng. Nov., '25.

Some Problems of Highway Operation. G. H. Delano. Bost. Soc. C. E. Nov., '25.

Road Progress in the South Atlantic and Gulf States.* John W. Shaver. Eng. N. R. Serial beginning Dec. 3, '25.

Concrete Improved by the Use of Diatomaceous Earth.* C. N. Conner. Eng. N. R. Dec. 17, '25.

E. Bridges, Viaducts, and Arches

b. Iron and Steel Bridges and Viaducts

Notes on the Inspection of Metal Bridges.* Llewellyn N. Edwards. Can. Engr. Nov. 24, '25.

Notes on the Strengthening of Two Historic Bridges in Worcestershire.* B. C. Hammond.

Inst. Mun. & Co. Eng. Dec. 1, '25.

Die Floridsdorfer Brücke über die Donau in Wien. (The Floridsdorf Bridge over the Danube in Vienna.) Hafner. Ver. deu. Ing. Nov. 21, '25.

d. Concrete and Reinforced Concrete Bridges and Viaducts

Ueber den Bauentwurf der Brigittebrücke in Wien in Eisenbeton.* (On the Design for the Brigitte Bridge in Vienna, of Reinforced Concrete.) Rudolf Saliger. Oest. Ing. Arch. Ver. Nov. 13, '25.

Notes on the Strengthening of Two Historic Bridges in Worcestershire.* B. C. Hammond.
Inst. Mnn. & Co. Engr. Dec. 1, '25.

i. Suspension Bridges. Transfer Bridges.

California Suspension Bridge in Service Since 1862.* Eng. N. R. Dec. 3, '25.

x. Miscellaneous

Bridge to Span the Grand Canyon.* Lewis R. Freeman. Sci. Am. Dec., '25.
The Strengthening of Bridges.* C. G. Mitchell. (Paper read before Public Works, Roads
and Transports Congress.) Eng. Dec. 4, '25.

F. Inland Waters and Waterways

a. Natural Waterways (General Articles)

The St. Lawrence Waterway to the Sea. Discussion. W. M. Black, G. B. Pillsbury, and
L. F. Harza. Am. Soc. C. E. Dec., '25.

c. Regulation of Waterways—Volume of Discharge, Freshets, Floods, Soundings

Flood Flow Characteristics.* Merrill M. Bernard and C. S. Jarvis. Am. Soc. C. E. Dec., '25.

Flood Protection Works Progress at Peru, Ind.* Eng. N. R. Dec. 10, '25.

Die Rheinregulierung. (Regulation of the Rhine.) Langen. Ver. deu. Ing. Serial begin-

ning Nov. 21, '25.

f. Supply, Sources of Water, Drains, Reservoirs

Stream Pollution.* Discussion. Richard H. Gould and J. Frederick Jackson. Am. Soc.
C. E. Dec., '25

g. Consolidation of Banks, Leakage, etc.

River Walls of the Miami Conservancy District.* Eng. & Contr. Nov. 18, '25.
Large Channel-Dredging Project at Portland, Ore.* Eng. N. R. Dec. 17, '25.

h. Boats, Barges

Doppelschrauben-Dieselmotorboot "Rheinfelden". (Double Screw Diesel Motor Boat "Rhein-
felden.") Schw. Bauz Oct. 31, '25.

k. Utilization of Inland Waterways, Freight, Capacity

Relation of the Ohio River and Its Tributaries to Transportation in the United States. A
Symposium Discussion. Harry M. Taylor and W. M. Black. Am. Soc. C. E. Dec., '25.
Oberitalienische Grossschiffahrtspläne.* (Inland Navigation Plans for Upper Italy.) Ludin.
Z. d. Bauver. Nov. 18, '25.

G. Maritime Works

c. Vessels and Maritime Navigation, Lighthouses, Buoys, Various Signals

Note sur Une Délicate Réparation de Chaudières Marines.* (Note on a Delicate Piece of
Repair Work on Marine Boilers.) R. Dauwe. Assoc. Ing. Gand. Pt. 3, '25.

h. Wharves, Mooring Buoys, Harbor Equipment

Extending Concrete Pier.* G. S. Burrell. (From *Public Works of the Navy*.) Eng. &
Contr. Nov. 18, '25.

j. Dockyard Machinery and Shipyards, Drydocks

The New Esquimalt Drydock.* J. P. Forde. Eng. Inst. Can. Dec., '25.

H. Railroads, Street and Interurban Railways. Automobiles. Aeronautics

a. Railroads

1. General Articles

Precast Concrete Units for Railway Structures. (Paper read before Am. Ry. Bridge and
Bldg. Assoc.) Eng. N. R. Dec. 17, '25.

Missouri Pacific Reduces Time of 112-Mile Trip Two Hours.* Ry. Age Dec. 19, '25.

3. Roadbed (Grading Construction Work)

New Type of Pipe Solves Drainage Problem in Yard.* Ry. Eng. & Main. Dec., '25.
Northwest Grade Separation, Toronto.* Can. Engr. Dec. 8, '25.

4. Track

Some Considerations on the Position of the Question of Steel Rails in Belgium.* J. Servais.
Int. Ry. Cong. Assoc. July-Oct., '25.

The Standardisation of Permanent Way Material on German Railways.* R. Desprets. Int.
Ry. Cong. Assoc. July-Oct., '25.

The Essentials of Maintenance Work. C. E. Johnston. (From paper read before Road-
masters' and Maintenance of Way Assoc.) Eng. & Contr. Nov. 18, '25.

A Design for Permanent Track Construction.* Frank H. Alfred and Paul Chipman. Eng. N. R.
Dec. 10, '25; Ry. Age Dec. 12, '25; Ry. Rev. Dec. 12, '25.

5. Signals and Safety Apparatus

A Study of Locomotive Whistles.* Arthur L. Foley. Ry. Age Dec. 5, '25.
Nouveau Signal. Système Wig-wag, pour Passages à Niveau.* (New Wig-wag Type of
Signal for Grade Crossings.) Gen. Civ. Nov. 7, '25.

6. Rolling Stock (Locomotives, Cars) Fuel
 New Type Locomotives for Texas & Pacific.* W. W. Baxter. Ry. Rev. Dec., '25.
 Oil-Electric versus Steam Locomotives.* W. W. Baxter. Ry. Rev. Dec. 12, '25.

Locomotive Facilities Rebuilt in Record Time.* Ry. Age Dec. 19, '25.

First Texas Type Locomotives for T. & P.* Ry. Age Dec. 19, '25.

7. Use of Electricity

Electrification of Passenger Service.* Ry. Age Nov. 21, '25.

D. T. & I. Overhead Contact System.* Ry. Age Dec. 19, '25.

Der Unterhalt der elektrischen Fahrleitungen der Schweizerischen Bundesbahnen.* (Maintenance of the Electric Trolley Wires of the Swiss Federal Railways.) H. W. Schuler. Schw. Bauz. Oct. 24, '25.

Fahrergebnisse der dieselelektrischen Lokomotive in Russland. (Operating Results with Diesel Electric Locomotives in Russia.) G. Lomonosoff. Ver. deu. Ing. Oct. 31, '25.

Wirtschaftliche und konstruktive Gesichtspunkte im Bau neuerer Gross-Elektrolokomotiven.* (Economic and Constructive Criteria in Building Modern Large Electric Locomotives.) A. Laternser. Schw. Bauz. Nov. 21, '25.

8. Stations, Terminals, Engine Houses, Shops

Denver & Rio Grande Western Cuts Material Handling Costs.* Ry. Age Nov. 21, '25.

Pennsylvania Reconstructs Juniata Shops on a Large Scale.* Ry. Age Nov. 21, '25.

Coal and Sand Facilities Embody Novel Features.* Ry. Age Nov. 28, '25.

S. P. Constructs New Creosoting Plant.* R. E. Kelly. Ry. Rev. Dec. 19, '25.

How Princeton Shops Were Rebuilt.* Geo. E. Boyd. Ry. Rev. Dec. 19, '25.

d. Street Railways, Elevated Railways, Subways

1. General Articles

The Subways of Philadelphia.* H. E. Ehlers. Engrs. & Eng. Nov., '25.

e. Automobiles

2. Internal Combustion Engine Automobiles

Meeting the Competition of Buses and Trucks.* Ry. Age Dec. 12, '25.

Deterioration of Duralumin in the "Shenandoah". Eng. N. R. Dec. 17, '25.

I. Municipal Water-Works. Agricultural Engineering. Irrigation

a. General Articles

Small Town Water Supplies in North Carolina.* Frank V. Fields. Cornell C. E. Nov., '25.

Large Additional Water Supply Recommended for Boston Metropolitan District and Worcester. Eng. N. R. Dec. 10, '25.

b. Hydrology, Water Resources

Partial Purification of Sewage by Activated Sludge.* H. C. Whitehead. Inst. Mun. & Co. Engrs. Dec. 1, '25.

c. Dams and Reservoirs

Multiple-Arch Dam at Gem Lake on Rush Creek, California.* Discussion: L. R. Jorgensen, Walter H. Wheeler, C. A. P. Turner, Thomas H. Wiggin, C. H. Howell, E. W. Lane, E. J. Waugh, and Alfred D. Flinn. Am. Soc. C. E. Dec., '25.

Arch Dam Repaired by Fills Above and Below Structure.* John E. Field. Eng. N. R. Dec. 10, '25.

d. Analysis and Purification of Water

Chlorophenol Tastes in Milwaukee's Water Supply.* Russell W. Cunliffe. Am. W. W. Assoc. Nov., '25.

Composition of Mud Balls.* W. S. Mahlie. Am. W. W. Assoc. Nov., '25.

Softening Public Water Supplies.* John C. White. Am. W. W. Assoc. Nov., '25.

The Sensitivity of the Ortho-Tolidine and Starch-Iodide Tests for Free Chlorine.* A. M. Bushnell and C. S. Boruff. Am. W. W. Assoc. Nov., '25.

Alum Floc: What is It? William D. Hatfield. Am. W. W. Assoc. Nov., '25.

More Typhoid Fever from Cross-Connected and Dual Water Supplies.* Am. W. W. Assoc. Nov., '25.

The Prevention of Deposit in Water Mains. William Ransom. Inst. Mun. & Co. Engrs. Dec. 1, '25.

e. Distribution of Water

The Water Supply of the City of Los Angeles with Particular Reference to the Area Supplied by Pumps.* Wm. W. Hurlbut. Am. W. W. Assoc. Nov., '25.

What Metering Has Done for the Evansville, Indiana, Water Works.* Charles Streithof. Am. W. W. Assoc. Nov., '25.

Leakage Tests of Cast-Iron Force Main at Columbus, Ohio.* John C. Prior. Eng. N. R. Nov. 26, '25.

Co-ordination of Irrigation and Power.* William Kelly. Am. Soc. C. E. Dec., '25.

Building a Large Intake Pipe Line in Lake Michigan.* C. R. Knowles. Ry. Eng. & Main. Dec., '25.

The Improved Venturi Flume.* H. B. Muckleston and E. W. Lane. Am. Soc. C. E. Dec., '25.

Beiträge zum Problem der Abdichtung von Druckstollen.* (Contributions to the Problem of Preventing Leakage Out of Pressure Conduits.) A. Feller. Schw. Bauz. Oct. 31, '25.

f. Drainage of Land

Permissible Canal Velocities.* Discussion: H. B. Muckleston, Elbert M. Chandler, Robert S. Stockton and R. A. Hart. Am. Soc. C. E. Dec., '25.

J. Sewerage. Sewage and Refuse Disposal

a. Sewers and Drains

The Reinforced Concrete Arch in Sewer Construction: A Review of Past Practice in Design and an Account of Recent Studies in St. Louis, Missouri. Discussion: Charles Terzaghi, George Paaswell, E. G. Haines, Kenneth Allen, N. Y. Veatch, Jr., and S. D. Bleich. Am. Soc. C. E. Dec., '25.

Building 29-Ft. Concrete Arch Sewer at Richmond, Va.* Eng. N. R. Dec. 17, '25.

Nomogramm für die Dimensionierung von städtischen Kanalnetzen.* (Nomogram for Proportioning Municipal Sewer Pipe Lines.) J. Wachsmann. Gesund. Ing. Nov. 28, '25.

b. Sewage Disposal, Purification

Methods Used in Sewage Purification. F. W. Harris. (Paper read before Royal San. Assoc. of Scotland.) Can. Engr. Nov. 24, '25.

Stream Pollution.* Discussion: Richard H. Gould and J. Frederick Jackson. Am. Soc. C. E. Dec., '25.

Sewage Disposal of Rural Areas, Both from an Engineering and Economic Aspect.

W. H. Makepeace. Inst. Mun. & Co. Engrs. Dec. 1, '25.

Sludge Disposal. P. G. Lloyd. Inst. Mun. & Co. Engrs. Dec. 1, '25.

New Sewage Disposal Plant at Kitchener.* Stanley Shupe. Can Engr. Dec. 1, '25.

Activated Sludge Plant, Melford, Sask.* J. E. Underwood. Can. Engr. Dec. 15, '25.

Considérations sur l'Epuration des Eaux Résiduaires.* (Observations on the Purification of Waste Waters.) E. Cauterman and A. Hennekinne. Assoc. Ing. Gand. Pt. 3, '25.

c. Refuse Disposal

Atlanta Now Sells Excess Steam from Refuse Incinerator.* H. J. Cates. Eng. N. R. Dec. 3, '25.

x. Miscellaneous

Rebuilding Old Sewage-Works in Borough of Brooklyn.* Eng. N. R. Nov. 26, '25.

The Detection and Elimination of Odors from Oil Refineries. Discussion: Robert Spurr Weston. Am. Soc. C. E. Dec., '25.

K. Heat Engines

b. Steam Turbines

Les Turbines à Soutirage de Vapeur pour les Chauffages Industriels.* (Steam Turbines Whose Exhaust is Used for Industrial Heating.) Gen. Civ. Nov. 14, '25.

L. Electricity

b. Distribution and Transmission of Electricity

2. Long-Distance Transmission of Energy

The Long Span Across the Narrows at Tacoma.* J. V. Gongwer and A. F. Darland.

A. I. E. E. Dec., '25.

Les Grands Postes de Transformation Electrique en Plein Air. (Large Open Air Electric Transformer Stations.) J. Planteau. Gen. Civ. Serial beginning Nov. 28, '25.

e. Electrochemistry and Electrometallurgy

Ueber elektrische Schweißung.* (On Electric Welding.) H. Neese. Ver. deu. Ing. Nov. 7, '25.

f. Signals and Communication

Der elektrische Fernseher, das "Telehor". (Electric Vision, the "Telehor"). Paul Diner-Dénes. Ver. deu. Ing. Nov. 28, '25.

M. Architecture

f. Factories and Mill Buildings

Reconstruction of a Paper Mill in Washington.* R. A. Huestis. Eng. N. R. Dec. 24, '25.

Les Nouveaux Magasins en Béton Armé de la Maison Henri Esders, à Paris.* (New Reinforced Concrete Shops of the Maison Henri Esders, in Paris.) L. Gellusseau. Gen. Civ. Oct. 31, '25.

g. Other Buildings

La Consolidation du Pilier de la Tour de la Cathédrale de Strasbourg.* (Consolidation of the Tower Pillar in the Strasbourg Cathedral.) C. Dauchy. Gen. Civ. Nov. 21, '25.

h. Roofs, Domes

Dead Level Roofs. J. I. Holder. (From *Architect and Engineer*.) Eng. & Contr. Nov. 25, '25.

i. Fire Protection

Theatre Safety Curtains. (From *Quarterly of Nat'l Fire Protection Assoc.*) Eng. & Contr. Nov. 25, '25.

x. Miscellaneous

Protection Against Damage by Earthquakes. C. E. Wing. (Paper read before League of Calif. Municipalities.) Mun. & Co. Eng., Nov., '25.

O. Administration. Legislation. Economics. Statistics

g. Engineering Education

The Relation between Engineering Education and Research with Particular Reference to the California Institute of Technology Plan.* R. W. Sorensen. A. I. E. E. Dec., '25. Zur Hunderjahrfeier der Technischen Hochschule Karlsruhe.* (Centenary Celebration of the Karlsruhe Polytechnical School.) Ferd. Schleicher. Ver. deu. Ing. Oct. 31, '25.

Q. Surveying and Geodesy

The Geodetic Survey of Canada.* J. L. Rannie. Eng. Inst. Can. Dec., '25. Aerial Photographs Aid the Map Maker.* Philip DeL. Passy. (From Canadian National Defense Quarterly.) Can. Engr. Dec. 22, '25.

Use of 300-and 500-ft. Tapes for Survey Traversing.* Harry Rubey. Eng. N. R. Dec. 24, '25.

S. City Planning

Zoning and Its Benefits. B. Evan Parry. (Paper read before Town Planning Inst. Can.) Eng. & Contr. Nov. 25, '25.

Excess Condemnation in City Planning. A Symposium. Discussion: M. W. Weir. Am. Soc. C. E. Dec., '25.

R. Heat Engines

f. Electricity

g. Electrical Transmission and Distribution

The Iron-Glass Insulators Transformed by Fire. G. A. Gordon. Eng. & Contr. Nov. 25, '25.

h. Telecommunications and Electronics

Power-Supply Protection. (On Circuit Winding.) H. K. Koenig. Eng. & Contr. Nov. 25, '25.

W. Aerodynamics

i. Aerodynamics and Wind Tunnel

Reconstruction of a Plant in Wisconsin.* J. A. Hinde. Eng. & Contr. Nov. 25, '25.

j. Other Industries

The Construction of the Second Stage of the Ganges Canal. G. D. Smith. Eng. & Contr. Nov. 25, '25.

k. Roads, Bridges

Dear Leader Boys. T. F. Hether. (From American Boy Scout.) Eng. & Contr. Nov. 25, '25.

l. Pipe Piping

Trade-Sales Circulars. (From Germany to U.S.) The Merchandise News. Eng. & Contr. Vol. 35, '25.

Employment Service

The Engineering Societies Employment Service is under the joint management of the National Societies of Civil, Mining, Mechanical, and Electrical Engineers. A Chicago office is maintained in co-operation with the Western Society of Engineers, and a San Francisco office, in co-operation with the Engineers' Club of San Francisco and the California Section of the American Chemical Society. The Service is available only to the several memberships and is maintained by contributions from the Societies and their individual members who are directly benefited.

Offices.—Eastern Office, 33 West 39th Street, New York, N. Y., Walter V. Brown, Manager; Chicago Office, 53 West Jackson Boulevard, Room 1736, Chicago, Ill., A. Krauser, Manager; and San Francisco Office, 57 Post Street, Room 715, San Francisco, Calif., Newton D. Cook, Manager.

Men Available.—Under this heading, brief announcements will be published without charge. These announcements will not be repeated, except on request received after an interval of one month. Names and records will remain in the active files of the Service for a period of three months, and are renewable on request. Notices for *Proceedings* should be addressed to Employment Service, 33 West 39th Street, New York, N. Y., and should be received prior to the first of the month.

Opportunities.—A Bulletin of engineering positions available is published weekly and may be obtained by members of the Societies concerned at a subscription rate of \$3 per quarter, or \$10 per annum, payable in advance. Positions which are not filled promptly as a result of publication in the Bulletin, may be announced herein.

Voluntary Contributions.—Members obtaining positions through the medium of this Service are invited to co-operate with the Societies in the financing of the work by nominal contributions made within thirty days after placement, on the basis of \$10 for all positions paying a salary of \$2 000 or less per annum; \$10 plus 1% of all amounts in excess of \$2 000 per annum; temporary positions (of one month or less), 3% of total salary received. The income contributed by the members, together with the finances appropriated by the four Societies named, will be sufficient, it is hoped, not only to maintain but to increase and extend the service.

Replies to Announcements.—Replies to announcements published herein, or in the Bulletin, should be addressed to the key number indicated in each case, with a two-cent stamp attached for re-forwarding, and forwarded to the Employment Service at the address given. Replies received by the Service after the positions to which they refer have been filled, will not be forwarded.

POSITIONS AVAILABLE

ENGINEER, about 30, familiar with structural building design, as salesman or sales engineer; graduates preferred, with some

sales ability and enough personality to be able to call upon and talk to architects and contractors. Apply by letter. Location, Ill. R-8434-C-S.

MEN AVAILABLE

CIVIL ENGINEER AND SUPERINTENDENT OF CONSTRUCTION, Assoc. M. Am. Soc. C. E.; age 37; married. Sixteen years' experience in water-works, irrigation, road, and concrete construction and design. Ten years in tropical Spanish-speaking country. Able to speak Spanish fluently. Positions held assistant engineer, civil engineer, district engineer, superintendent of construction. Will go anywhere. A-2473.

PERMANENT POSITION DESIRED BY ENGINEER, Assoc. M. Am. Soc. C. E.; age 41. Eighteen years' experience since college. Experienced on construction and design of steam power plants, dams, sewage disposal plants, and pavements, including State roads. Has had some railroad valuation and subway office work. Is employed at present, and considers permanency more desirable than higher salary. B-1514.

SUPERINTENDENT OF BUILDING-ENGINEER, M. Am. Soc. C. E.; married. Twenty years' experience in building work, including design, superintendence, and construction with own force. Capable of and well qualified as superintendent of buildings and grounds for a college, or other large institution requiring experienced man for construction, maintenance, and repairs. B-5653.

CIVIL ENGINEER, M. Am. Soc. C. E.; married. More than twenty-five years' broad experience on construction in the civil engineering line, including bridges, subaqueous tunnels, sewers, etc. Prefers position as maintenance engineer for industrial plant. Part of experience has been with contractor. Employed at present. Salary \$800. Licensed New York State Professional Engineer. At present, resident engineer on bridge construction. Available on short notice. Prefers position in New York City. B-8178.

ENGINEER EXECUTIVE, M. Am. Soc. C. E.; age 35; married. Wide experience in oper-

ation, design, and construction of important water and sewage works. Successfully managed water-works serving 100 000 population; recently supervised design and construction of two 35 000 000-gal., steam-driven pumping stations, and 20 000 000-gal., softening plant. Former chief of important State department. Available on reasonable notice. C-589.

CIVIL ENGINEER, Assoc. M. Am. Soc. C. E.; degrees, B. S. in Civil and Irrigation Engineering; M. S. E., in Highway Engineering, University of Michigan; age 41; married. Four years, field and office, irrigation development; three years, design and construction, drainage systems in arid West. Six years, in charge, road materials testing laboratory, Western college and State highway department; also teaching during same time with rank of Associate Professor. Employed, but desires change. Teaching or testing laboratory position preferred. C-718.

GRADUATE C. E., Jun. Am. Soc. C. E.; age 27. Four years' experience in engineering, highway location and construction, and reinforced concrete bridge construction. Will go anywhere. Speaks Spanish and a little French. Available February 1, 1926. C-737.

VALUATION ENGINEER - STATISTICIAN, Assoc. M. Am. Soc. C. E., university graduate. Sixteen years' varied engineering experience, including power plant construction, reports on water supply and hydro-electric projects, investigations and financial and economic analyses, physical valuations, book cost determinations on street and interurban railways, water supply, gas, electric properties, preparation and presentation of evidence on capital, earnings and rates before regulatory bodies. Seven years with present employers, but desires new and broader field of work. Available on about three months' notice. Location immaterial. C-741.

to 1926 to gather a certain amount of information concerning the effect of various factors on the value of real estate. The results of this investigation will be published in a series of articles in the "Journal of Land Economics." The first article will appear in the January number of the journal.

The second article will appear in the March number, and so on. The third article will appear in the May number, and so on. The fourth article will appear in the July number, and so on. The fifth article will appear in the September number, and so on. The sixth article will appear in the November number, and so on. The seventh article will appear in the December number, and so on. The eighth article will appear in the January number of the next year, and so on.

RENTAL DATA REPORTS

for all cities in the United States. This report will be issued quarterly, and will contain data on the rental values of all major cities in the United States. It will also include data on the rental values of minor cities in the United States.

This report will be issued quarterly, and will contain data on the rental values of all major cities in the United States. It will also include data on the rental values of minor cities in the United States.

Membership

(From December 2, 1925, to January 5, 1926)

Additions

	Date of Membership.
ALBRIGHT, Henry Fleetwood. Vice-Pres. and Director, Western Elec. Co., Inc., Hawthorne Station, Chicago, Ill.....	M. Dec. 14, 1925
ANDERSON, Walter Wood. 68 East Main St., Bay Shore, N. Y.....	Jun. Jan. 15, 1923
ANGAS, William Mack. Lieut., C. E. C., U. S. N.; Asst. Public Works Officer, 11th Naval Dist., San Diego, Calif.....	Assoc. M. Dec. 14, 1925
ARMSTRONG, Walter Hamilton. Asst. to Chf. Engr., Murrie & Co., Inc., New York, N. Y. (Res., 57 Pearl St., Paterson, N. J.).....	Assoc. M. Dec. 14, 1925
ARRIGONI, Cheilo Lino. Gen. Mgr. and Vice-Pres., Frank Arrigoni & Son, Inc., 624 Main St., Middletown, Conn.....	Assoc. M. Dec. 14, 1925
BAILEY, Paul. Deputy Chf., Div. of Eng. and Irrig., and Deputy State Engr., 627 Forum Bldg. (Res., 1109 Fortleth St.), Sacramento, Calif.....	Jun. Dec. 14, 1925
BAKER, Gerard Morgan. Supt., Adams & Adams, 701 Builders Exchange Bldg., San Antonio, Tex.....	Assoc. M. April 7, 1913
BALDWIN, William Henry. First Vice-Pres., Tennessee Eastern Elec. Co.; Vice-Pres. and Purchasing Agt., Carolina Eng. Constr. Co. and for the Johnson City Traction Corporation, 50 Federal St., Boston, Mass.....	M. Dec. 14, 1925
BARNES, Frank William. Vice-Pres., Parklak Constr. Corporation, 84 Pine St., New York (Res., 92-42 Seminole Ave., Hollis), N. Y.....	Jun. Dec. 14, 1925
BARTON, Edward Roy. Junior Highway Engr., U. S. Bureau of Public Roads, Washington, D. C.....	Assoc. M. Dec. 14, 1925
BENNETT, Bert Orville. City Engr., Caruthersville, Mo.....	Assoc. M. Dec. 14, 1925
BENSEL, John Anderson, Jr. 17 South Parkway, East Orange N. J.....	Jun. Oct. 12, 1925
BERRY, Charles Radford. Asst. Engr., Wm. H. Dechant & Sons, 407 Ann St., West Reading, Pa.....	Assoc. M. Dec. 14, 1925
BLACK, James Buckley. Associated Engr. (Brussel & Viterbo-J. B. Black), 307 North Michigan Ave., Chicago, Ill.....	Jun. June 6, 1911
BONINI, Francis Joseph. Asst. Engr., John F. Fairchild, 4 North 3d Ave. (Res., 356 Union Ave.), Mt. Vernon, N. Y.....	Assoc. M. June 23, 1916
BONNER, Frank Francisco. Dist. Engr., U. S. Forest Service, Ferry Bldg., San Francisco, Calif.....	Jun. Dec. 14, 1925
BONNEY, Orris. Engr. in Chg. of Sewer Design and Constr. Office, Chf. Engr., Dept. of Public Service (Res., 60 Jason Ave.), Columbus, Ohio.....	Assoc. M. Dec. 14, 1925
BOWLBY, Henry Lee. Chf. Engr., Long Island State Park Comm., 302 Broadway, New York, N. Y.....	Jun. Feb. 25, 1924
BROFOS, Gustav Fritjof. Bldg. Insp., Ill. Cent. R. R. Bldg. Dept. (Res., 5492 Cornell Ave.), Chicago, Ill.....	Assoc. M. Dec. 14, 1925
BROWN, Frederick Theodore. 10361 One Hundred and Third St., Ozone Park, N. Y.....	Assoc. M. Mar. 14, 1916
BROWN, Robert Francis. 853 Middlefield Rd., Palo Alto, Calif.....	M. Dec. 14, 1925
BUCKLEY, Rex Elmer. Chf. Engr., The Boulevard & Bay Land & Development Co., Box 2565, St. Petersburg, Fla.....	Assoc. M. Dec. 14, 1925
BULLOCK, Virgil William. 620 West 115th St., New York, N. Y.....	Jun. Oct. 12, 1925
BURTON, Willard Augustus. Res. Engr. Black & Veatch, Mutual Bldg., Kansas City, Mo.....	Assoc. M. Oct. 12, 1925
CALKINS, Alfred Stone. City Engr., City Hall, Joliet, Ill.....	M. Dec. 14, 1925
CALLAHAN, Arthur Francis. Engr. in Chg. of Constr., Triumph Bldg. Corporation, 1950 Andrews Ave. (Res., 1985 Honeywell Ave.), New York, N. Y.....	Assoc. M. Dec. 14, 1925
CALLAHAN, Cornelius Joseph. Cons. Engr., 120 Liberty St., New York, N. Y.....	Assoc. M. Dec. 14, 1925
CAYE, Woolsey Moorman. Designing Engr., Commr. of Sewerage (Res., 2120 West Jefferson St.), Louisville, Ky.....	M. Dec. 14, 1925
COLEMAN, Joseph Pickens. (Plains Paving Co.) (Plains Production Co.), 719 Staley Bldg., Wichita Falls, Tex.....	Jun. Nov. 9, 1920
COMEY, Arthur Coleman. Cons. City Planning Engr., 201 Abbot Bldg., Harvard Sq., Cambridge, Mass.....	Assoc. M. Dec. 14, 1925
COMPTON, Horace Bernard. Asst. Prof., Rensselaer Polytechnic Inst., Troy (Res., 207 Lincoln St., Scotia), N. Y.....	M. Dec. 14, 1925
COSTA, John Joseph. Designing and Cons. Structural Engr. 8416 Twenty-first Ave., Brooklyn, N. Y.....	Assoc. M. Dec. 14, 1925
CUNNINGHAM, John Wilbur. Cons. Engr. (Baar & Cunningham), 414 Spalding Bldg., Portland, Ore.....	Assoc. M. Aug. 31, 1925
DEBEAU, Edwin Bright. Gen. Asst. Engr., Sidney B. Bowne, 222 Front St., Mineola (Res., 15 Thorne Ave., Hempstead), N. Y.....	Jun. Aug. 31, 1909
	Assoc. M. Nov. 4, 1914
	M. Oct. 12, 1925
	Assoc. M. Dec. 14, 1925

MEMBERSHIP—(Continued)	Date of Membership.
DE CARTERET, Heller St. George Squares. Structural Draftsman and Checker, The Foundation Co., 120 Liberty St., New York (Res., 837 East 22d St., Apartment 2-B, Brooklyn), N. Y.	Jun. Oct. 12, 1925
DEMERITT, William Wellesley. Supt. of Lighthouses, Key West, Fla.	Assoc. M. Dec. 14, 1925
DICKINSON, Joseph Haines. Pres., United Steel Block Corporation; Mgr., Logging Machinery Dept., Lidgerwood Mfg. Co., New York, N. Y. (Res., New England Ave., Winter Park, Fla.).	M.. Dec. 14, 1925
DONNELLON, Samuel Ruckston. Engr., Constr. and Design, Linde Air Products Co., The Prest-O-Lite Co., Inc. and Carbide & Carbon Chemicals Corporation, 30 East 42d St., New York, N. Y.	M.. Dec. 14, 1925
DUSTIN, William Alfred. Rockport, Ill.	Jun. Dec. 14, 1925
DYER, Harry Butorff. Mgr., Marine Dept., Nashville Bridge Co., Nashville, Tenn.	Jun. Nov. 21, 1921 Assoc. M. Dec. 14, 1925
ELY, John Andrews. Dean, Coll. of Arts and Science, St. Johns Univ., Shanghai, China.	Jun. April 30, 1901 Assoc. M. Jan. 8, 1908 M. Oct. 12, 1925
FAHLQUIST, Frank Edwin. Field Engr., Portland Cement Assoc., Boston, Mass. (Res., 113 Pawtuxet Ave., Edgewood, Providence, R. I.).	Jun. Aug. 31, 1925
FRETTES, Wallace Van Rensselaer. Asst. Res. Engr., George C. Diehl, Inc., 5488 Main St., Williamsburg, N. Y.	Jun. Dec. 14, 1925
GABRIEL, Harry Richard. Res. Engr., State Highway Comm., 921 Bergen Ave., Jersey City, N. J.	M. Dec. 14, 1925
GELDERT, Leonard Dunbar. Structural Designer, Elec. Bond & Share Co., 21 West 9th St., New York, N. Y.	Jun. Dec. 14, 1925
GILLIS, Lawrence Robert. 1578 Washington St., Denver, Colo.	Jun. Oct. 12, 1925
GOTWALS, Eugene Warren. Project Engr., State Highway Comm., Court House, Maryville, Mo.	Jun. Oct. 12, 1925
GOWINS, Harry, Jr. Instrumentman and Draftsman, Nagle, Witt, Rolling Eng. Co., 1024 Keystone Bldg., Houston, Tex.	Jun. Dec. 14, 1925
GREENE, Barclay Adams. Pres., Gunite Concrete & Constr. Co., 114 West 10th St., Kansas City, Mo.	Jun. Nov. 21, 1921 Assoc. M. Dec. 14, 1925
GUEST, John Laurens. Office Engr., Aluminum Co. of Canada Ltd., Arvida, Que., Canada.	Jun. June 18, 1922 Assoc. M. Dec. 14, 1925
HACKLEY, Roy Chester. 2508 Buena Vista Way, Berkeley, Calif.	M. Dec. 14, 1925
HALL, William Holland. Prof., Civ. Eng., Duke Univ., College Station, Durham, N. C.	Assoc. M. Dec. 14, 1925
HAMMELL, Charles Edward. Junior Engr., U. S. Engr. Office, 405 Customhouse, Cincinnati, Ohio.	Assoc. M. Dec. 14, 1925 Assoc. M. July 11, 1921
HANSON, Gustave Adolph. Chf. Engr., G. A. Miller, Box 2575, Tampa, Fla.	M. Dec. 14, 1925
HARMON, Burt. Hydr. Engr., Long Beach Water Dept. (Res., 201 Golden Ave.), Long Beach, Calif.	M. Dec. 14, 1925
HESS, Paul Ernest. 329 East 87th St., New York, N. Y.	Jun. Dec. 14, 1925
HILBY, George Robert. Asst. State Surv. Gen., 220 State Capitol, Sacramento, Calif.	Assoc. M. Dec. 14, 1925
HILLMAN, Francis Thomas. With Winston Bros. Co., Apartado No. 24, Medellin, Colombia.	M. Oct. 12, 1925
HOWALT, Wilhelm. Res. Engr., Tannery Waste Disposal Committee of Pennsylvania, 139 Main St., Ridgway, Pa.	M. Dec. 14, 1925
HUNT, Thomas Dewick. Office Engr., King County Engr.'s Office, (Res., 1404 Thirty-first Ave., South), Seattle, Wash.	Assoc. M. Dec. 14, 1925
INGRAM, Fred. Care, S. P. Engrs., Oakridge, Ore.	Jun. Oct. 12, 1925
IVY, Joseph Withers. Mgr., Advisory and Designing Engr., Am. Cast Iron Pipe Co., 912 Scarritt Bldg., Kansas City, Mo.	Assoc. M. Dec. 14, 1925
JACOB, Elmer Acred. Engr., Provo Reservoir Co., Provo, Utah.	Assoc. M. Oct. 10, 1916 M. Oct. 12, 1925
KEENY, Giles Bernard. Y. M. C. A., White Plains, N. Y.	Affiliate Dec. 14, 1925
KELCEY, George Guy. Mgr., Traffic Eng. Div., Am. Gas Accumulator Co., Elizabeth, N. J.	Assoc. M. Dec. 14, 1925
KERANEN, George Matthew. Structural Draftsman, Southern Park Comm. (Res., 5808 South Park Ave.), Chicago, Ill.	Jun. Dec. 14, 1925
KIDD, George Frederick. Cons. Engr., 61 Hollywood Ave., East Orange, N. J.	M. Dec. 14, 1925
KING, Herbert Clinton. County Engr., Okmulgee County (Res., 507 East 16th St.), Okmulgee, Okla.	Assoc. M. Dec. 14, 1925
KNAPP, John Herbert. Box 277, Beaumont, Calif.	M. Mar. 16, 1925
KRAMER, Edwin Weed. Hydr. Engr., U. S. Forest Service, San Francisco, Calif.	M. Dec. 14, 1925
KRUEGER, Richard H. Chf. Designer, F. A. Chapper Iron Works, 652 East Fort St. (Res., 2005 Pingree Ave.), Detroit, Mich.	Jun. Dec. 14, 1925
KURTZ, Roberto. Alisima 436, Buenos Aires, Argentine Republic.	Assoc. M. Oct. 12, 1925
LEIGHTON, Chester Adam. Constr. Engr., Northern Constr. Co., Ltd., Box 386, Quebec, Que., Canada.	M. Dec. 14, 1925

MEMBERSHIP—(Continued)		Date of Membership.
LEONARD, Samuel John. Asst. Prof., Civ. Eng., Drexel Inst., Philadelphia, Pa.	Jun.	Dec. 14, 1925
LEWIS, Mortimer Reed. Prof. and Head of Dept., Agri. Eng., Univ. of Idaho, 204 North Monroe St., Moscow, Idaho.	Assoc. M.	June 1, 1920
LUPER, James Rhea. State Engr. (Res., 185 South 15th St.), Salem, Ore.	M.	Dec. 14, 1925
LYNCH, John Thomas. Field Drainage Engr., State Dept. of Roads and Highways, Box 94, Frankfort, Ky.	Assoc. M.	Dec. 14, 1925
LYNCH, John Thomas. Field Drainage Engr., State Dept. of Roads and Highways, Box 94, Frankfort, Ky.	Assoc. M.	Dec. 14, 1925
MACK, George John. Engr. and Estimator, Laur & Mack Contr. Co., Highland Ave. (Res., 915 James Ave.), Niagara Falls, N. Y.	Jun.	Dec. 14, 1925
MCCORMICK, Robert Lee. Cons., Civ. and Min. Engr., 2511 North 8th St., Terre Haute, Ind.	M.	Dec. 14, 1925
MCGAREY, Thomas Francis. 562 West 173d St., New York, N. Y.	Jun.	Aug. 31, 1925
MCLEAN, Cecil John. Hydr. Engr., Illinois Northern Utilities Co., 421 West First St., Dixon, Ill.	Assoc. M.	Dec. 14, 1925
MASKER, Samuel, Jr. Structural Draftsman, McClinic-Marshall Co., 1055 Madison Ave., Paterson, N. J.	Jun.	Dec. 14, 1925
MEYERHOLZ, Rheinier Ivan. Asst. Engr., Pacific Gas & Elec. Co., San Francisco (Res., 224 Saratoga Mt. View Rd., Cupertino), Calif.	Assoc. M.	Dec. 14, 1925
MORELAND, James Brown. With U. S. Lake Survey (Res., 602 Green St.), Ogdensburg, N. Y.	Jun.	Dec. 14, 1925
MORRISON, Deming William. Box 307, Nevada City, Calif.	Jun.	Dec. 14, 1925
MOWRY, John Barrows. 329 East Walnut Lane, Germantown, Philadelphia, Pa.	Jun.	Dec. 14, 1925
MUNN, Harvey Timlow. Hydr. Engr., National Board of Fire Underwriters, 209 West Jackson Boulevard, Suite 400, Chicago, Ill.	Assoc. M.	Oct. 14, 1919
MURPHY, Joseph Ambrose. Bridge Res. Engr., Lapwai and Spaulding Viaducts, North South Highway, 616 Main St., Lewiston, Idaho.	M.	Dec. 14, 1925
NEEL, Merville Charles. Efficiency Engr., Gas Plant, Met. Utilities Dist., 20th and Center Sts. (Res., 1059 South 28th St.), Omaha, Nebr.	Assoc. M.	Oct. 12, 1925
NICKEL, Edward August. Structural and Hydr. Engr., 370 Russ Bldg., San Francisco (Res., 1935 Berryman St., Berkeley), Calif.	Jun.	June 16, 1924
NOLAN, John Joseph. Asst. Gen. Supt., E. A. Mullen, Inc., 5512 Vine St., Philadelphia, Pa.	Assoc. M.	Dec. 14, 1925
PANTKE, Conrad Erich Walter. 174 Eightieth St., Brooklyn, N. Y.	Jun.	Dec. 14, 1925
PARSONS, Maynard Belden. Care, F. S. Strever Constr. Co., 84 Milton Ave., Balston Spa, N. Y.	Assoc. M.	Dec. 14, 1925
PRIDGEN, John Bailey. Dist. Engr., 6th Dist., State Highway Comm., Box 1341, Charlotte, N. C.	Jun.	Dec. 14, 1925
RAFFERTY, John Herbert. Instr. in Civ. Eng., Rice Inst., K. C. Hall, 820 Cranford, Houston, Tex.	Assoc. M.	Dec. 14, 1925
RITTGERS, Virden Acie. With V. V. Long & Co., 1300 Colcord Bldg., Oklahoma City, Okla.	Jun.	Dec. 14, 1925
ROBERTS, Clifford James. Care, The Trane Co., La Crosse, Wis.	Jun.	Dec. 14, 1925
ROGERS, Claude Jonathan. With R. L. Totten, Inc., 434 Brown Marx Bldg., Birmingham, Ala.	M.	Dec. 14, 1925
ROOK, Ross Henry. Insp. of Public Works, City of Los Angeles, (Res., 894 South Windsor Boulevard), Los Angeles, Calif.	Assoc. M.	Dec. 14, 1925
ROSS, Charles Raymond. Gen. Contr. (Ross & Ross), 1191 Virginia Ave., Columbus, Ohio	Jun.	Aug. 31, 1925
SCACCIAFERRO, Salvator John. Associate Prof., San Eng., Manhattan Coll., New York, N. Y. (Res., 506 Highland Ave., Clifton, N. J.)	Jun.	Oct. 10, 1921
SCHWARTZ, Jacob David. Topographical Draftsman, Highway Dept. with Pres., Borough of Queens, Long Island City (Res., 35 Herzl St., Brooklyn), N. Y.	Assoc. M.	Dec. 14, 1925
SEXTON, Clarence William Newsome. Lecturer, Civ. Eng., Univ. of Melbourne, Carlton, Victoria, Australia.	Jun.	Jan. 15, 1923
SHULITS, Samuel. Junior Engr., U. S. Engr. Office, 540 Federal Bldg., Buffalo, N. Y.	Assoc. M.	Dec. 14, 1925
SIACCI, Giacinto. With Holabird & Roche, 1400 Monroe Bldg. (Res., 908 Wilson Ave.), Chicago, Ill.	Jun.	Oct. 12, 1925
SIMONS, George Washington, Jr. Cons. Engr.; Chf. Engr., Consolidated Development & Eng. Corporation, 15 Julia St. (Res., 364 Avondale Ave.), Jacksonville, Fla.	M.	Dec. 14, 1925
SINGLETTON, Micajah Thomas. Engr. with H. F. Wiedeman, 1404 Candler Bldg., Atlanta, Ga.	M.	Dec. 14, 1925
SKINNER, James Madden. 801 Western Ave., Joliet, Ill.	Jun.	July 6, 1925

MEMBERSHIP—(Continued)		Date of Membership.
SMITH, Henry Ambrose. 712 Waveland Ave., Apartment 3, Chicago, III.	Jun.	Dec. 14, 1925
STEARNs, Albert Wells. Field Engr., Jenks & Ballou, 1035 Grosvenor Bldg. (Res., 16 Hawthorne St.), Providence, R. I.	Jun.	Dec. 4, 1922
SULLIVAN, William Shackelford. Asst. Engr., Dept., City Transit, 1211 Chestnut St., Philadelphia, Pa.	Assoc. M.	Dec. 14, 1925
SWOPE, Harold Malcolm. Office Engr. to Div. Engr., A. T. & S. F. Ry. (Res., 921 Brooks Ave.), Topeka, Kans.	M.	Dec. 14, 1925
	M.	Dec. 14, 1925
TATE, Robert L'Hommedieu. Res. Engr., Hudson Boulevard Bridge Impvt., 2920 Hudson Boulevard, Jersey City, N. J. (Res., 1400 University Ave., New York, N. Y.)	Jun. Assoc. M. M.	Mar. 4, 1913 April 17, 1917 Dec. 14, 1925
TAYLOR, Warren Crosby. Associate Prof., Civ. Eng., Union Coll., Schenectady, N. Y.	Jun. Assoc. M. M.	Feb. 4, 1908 Dec. 5, 1911 Dec. 14, 1925
VANDERHORST, Paul Marie. Eng. Dept., New York Telephone Co., 577 Madison Ave., Elizabeth, N. J.	Jun.	June 1, 1925
WALSH, Eugene Richard. Engr., Brown & Brown, Inc., 613 Lewis Bldg., Portland, Ore.	Assoc. M.	Dec. 14, 1925
WALTON, Jesse Pusey. Asst. Engr., Bridges and Bldgs., P. R. R., 729 Pennsylvania Station, Pittsburgh, Pa.	M.	Dec. 14, 1925
WEBER, Earl Richard. Prin. Asst. Engr., Burd, Giffels & Hamil- ton, 421 Kelcy Office Bldg., Grand Rapids, Mich.	Assoc. M.	Dec. 14, 1925
WEHEADON, Royston Frank. Gen. Draftsman, Port of New York Authority, 162 West 84th St., New York, N. Y.	Assoc. M.	Dec. 14, 1925
WILLIAMS, Ben Charles. Asst. Engr., A. L. Sonderegger, 736 North Orange Drive, Los Angeles, Calif.	Assoc. M.	Dec. 14, 1925
WILLIAMS, John Emil. Asst. Chf. Engr., Hoffman-Henon Co., 707 Redwood Ave., Yeadon, Pa.	Assoc. M.	Dec. 14, 1925
WINSLOW, Edward Llewellyn, Jr. Engr., Atwood & Nash, Inc. (Res., 3 Carter Court), Chapel Hill, N. C.	Assoc. M.	Dec. 14, 1925
YATES, Eugene Adams. Vice-Pres. and Gen. Mgr., Alabama Power Co., Birmingham, Ala.	Jun. Assoc. M. M.	Oct. 3, 1905 Dec. 2, 1907 Dec. 14, 1925
ZAHREN, Roy. Nestor, Calif.	M.	June 1, 1925

Reinstatements

MEMBERS

MEMBERS	Date of Reinstatement.
BUTLER, John Soule.	Dec. 14, 1925
CONNICK, Harris De Haven.	Dec. 14, 1925
JANES, George Portlock.	Dec. 14, 1925
MÜLLER, Ejnar Jönsberg.	Dec. 14, 1925
NEWTON-HOWES, Robert William.	Dec. 14, 1925
PATRICK, Charles Goodwin.	Dec. 14, 1925
SINCLAIR, Karl Augustus.	Dec. 14, 1925
SPOONER, Herman Winslow.	Dec. 14, 1925

ASSOCIATE MEMBERS

ARMSTRONG, Charles Johnston.	Dec. 14, 1925
BARKMANN, Ernst Henry.	Dec. 14, 1925
DREYFUS, Samuel Cellner.	Dec. 14, 1925
DUNLAP, Herbert Allen.	Dec. 14, 1925
FREW, Robert Dickson Alison.	Dec. 14, 1925
HALL, Charles Romney.	Dec. 14, 1925
HAYWOOD, Charles Ellsworth.	Dec. 14, 1925
HIESIGER, Charles Milton.	Dec. 14, 1925
HILTON, Joseph Churchill.	Dec. 14, 1925
HOWE, Lyman Stanley.	Dec. 14, 1925
HOWREN, William Davis.	Dec. 14, 1925
LACEY, Edward Philip.	Dec. 14, 1925
LIDDELL, Nathaniel Morris.	Dec. 14, 1925
NEWELL, Harry Edmund.	Dec. 14, 1925
RICE, John Turner.	Dec. 14, 1925
SORONDO, Raphael Valentin.	Dec. 14, 1925
STURGEON, George Blair, Sr.	Dec. 14, 1925
WEST, Frank Hubble.	Dec. 14, 1925
WILLIAMS, George Walter Garnham.	Dec. 14, 1925
WRAY, Herschel George.	Dec. 14, 1925

Resignations

MEMBERS

	Date of Resignation.
BLACK, Frank Laughton.....	Dec. 31, 1925
BREEN, John Edward.....	Dec. 31, 1925
DERICKSON, Richard Barnett.....	Dec. 31, 1925
FOSTER, Ernest Howard.....	Dec. 14, 1925
HARRIS, Lewis Birdsall.....	Dec. 14, 1925
JOHN, Griffith.....	Dec. 31, 1925
JONES, Arthur Lewis.....	Dec. 31, 1925
NELSON, James William.....	Dec. 31, 1925
NICHOLS, John Robert.....	Dec. 31, 1925
PATRICK, Mason Matthews.....	Dec. 31, 1925
RINDSFOS, Charles Siesel.....	Dec. 31, 1925
SERGEANT, George, Jr.....	Dec. 31, 1925
SMITH, William Henry.....	Dec. 31, 1925

ASSOCIATE MEMBERS

AYRES, John Henry.....	Dec. 31, 1925
BANDY, William Roy.....	Dec. 31, 1925
BENHAM, Claude Gilbert.....	Dec. 31, 1925
BLACKMAN, Lewis Egleston.....	Dec. 31, 1925
BUELL, Walter Augustus.....	Dec. 31, 1925
CARROLL, Charles Claude.....	Dec. 31, 1925
CASTILLO Y GRAU, Antonio.....	Dec. 31, 1925
COEYTAUX, Charles Henri.....	Dec. 31, 1925
CULLETON, Leo Giulio.....	Dec. 31, 1925
GORHAM, Fred Allen.....	Dec. 31, 1925
HAZELTON, William Sylvester.....	Dec. 31, 1925
HOHL, Leonard Louis.....	Dec. 31, 1925
HOWE, Charles Edward.....	Dec. 31, 1925
JACCARD, Eugene Samuel.....	Dec. 31, 1925
LANG, Frank August.....	Dec. 31, 1925
LEWIS, Chester Brooks.....	Dec. 31, 1925
MCGEE, Arthur Branch.....	Dec. 31, 1925
MILLER, Daniel Chambers.....	Dec. 31, 1925
PECK, Charles Franklin.....	Dec. 31, 1925
PRICE, Joseph.....	Dec. 14, 1925
RUCKES, Joseph John, Jr.....	Dec. 31, 1925
SAVILLE, Charles.....	Dec. 31, 1925
SCHACH, Niels Fermann.....	Dec. 31, 1925
SCHROEDER, Seaton, Jr.....	Dec. 31, 1925
SMITH, Travis Logan, Jr.....	Dec. 31, 1925
STRICKLER, Frederick Wineman.....	Dec. 14, 1925
TAYLOR, Henry.....	Dec. 31, 1925
WHITE, Frank Osmond.....	Dec. 31, 1925
WILLS, Arthur John.....	Dec. 31, 1925
WOODCOCK, Charles Franklin.....	Dec. 31, 1925

AFFILIATES

BROWN, William Alden.....	Dec. 31, 1925
JENNINGS, Charles Augustus.....	Dec. 31, 1925
MATHESON, Charles Pease.....	Dec. 31, 1925
STONE, William Greene.....	Dec. 31, 1925

JUNIORS

BASSETT, Harold Rhodes.....	Dec. 31, 1925
BENNETT, Curtis Burnham.....	Dec. 31, 1925
CAIRD, Alexander Winton.....	Dec. 31, 1925
GARDNER, Curtiss Tarrin.....	Dec. 31, 1925
METZNER, Ellis.....	Dec. 31, 1925
SEAMAN, Van Brunt.....	Dec. 31, 1925

Deaths

- BOSSERT, Carl Donald. Elected Junior, October 31, 1911; Associate Member, December 6, 1915; died September 12, 1925.
 CONNOR, Edward James. Elected Affiliate, January 31, 1911; died December 9, 1925.
 CHAMBERLIN, John Ross. Elected Associate Member, May 6, 1914; died December 15, 1925.
 FULLER, Franklin Ide. Elected Member, January 6, 1886; died December 16, 1925.

Deaths (*Continued*)

HUSSEY, Clarence Loring. Elected Member, April 7, 1924; died December 5, 1925.
PRINCE, George Thomas. Elected Member, April 4, 1894; died December 18, 1925.
PROSKAUER, Arthur Joseph Mayer. Elected Member, June 19, 1922; died November 23, 1925.
SOMERVILLE, Robert. Elected Member, June 1, 1887; died October, 1925.
THOMPSON, William Andrew. Elected Member, October 7, 1896; died December 15, 1925.
ULRICH, Edmund Boyd. Elected Associate Member, April 6, 1909; died November 20, 1925.
WOOD, Reuben Joseph. Elected Member, August 31, 1925; died October 15, 1925.

Total Membership of the Society January 5, 1926

Members	5 048
Associate Members.....	5 252

Corporate Members	10 300
Honorary Members	15
Juniors	827
Affiliates	150
Fellows	8
Total	11 300

Total 11,300

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